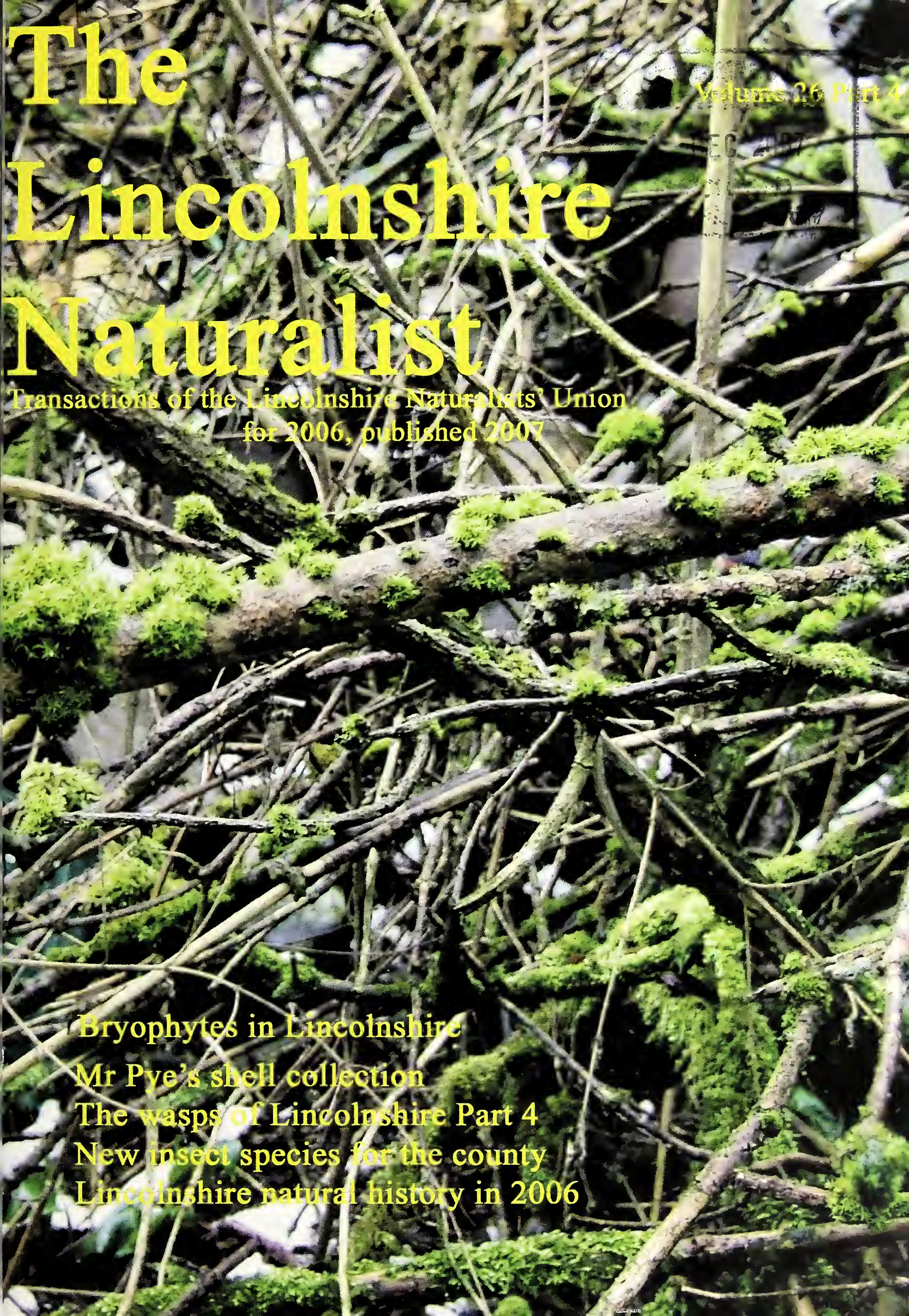


The Lincolnshire Naturalist

Volume 26 Part 4

Transactions of the Lincolnshire Naturalists' Union
for 2006, published 2007

Bryophytes in Lincolnshire
Mr Pye's shell collection
The wasps of Lincolnshire Part 4
New insect species for the county
Lincolnshire natural history in 2006

The Lincolnshire Naturalists' Union

Is the only amateur Natural History Society covering all of Lincolnshire.

◊

Exists for its members to enjoy, study and record the flora, fauna and physical features of Lincolnshire.

◊

Holds field natural history meetings throughout Lincolnshire during the spring, summer and autumn.

◊

Holds indoor talks, workshops, exhibitions and discussions during the winter.

◊

Welcomes new members and helps them to learn the skills of natural history to make study more enjoyable.

◊

Holds on computer the records of Lincolnshire's wildlife going back over a century.

◊

Supplies wildlife information to the Lincolnshire Wildlife Trust, English Nature, local authorities and private businesses to help nature conservation.

◊

Publishes its findings annually in The Lincolnshire Naturalist and more often in the LNU Communique.

◊

Produces occasional books and pamphlets on Lincolnshire's natural history.

Joining the Lincolnshire Naturalists' Union

If you would like to join us in studying Lincolnshire's Natural History

Ordinary Membership is	£15
Family & group membership is	£18
Student/senior citizen/junior membership is	£10
Life membership	£200
Joint life membership	£250

Please send your name, address and subscription (cheque or postal order) to:-
The Lincolnshire Naturalists' Union, c/o Lincolnshire Wildlife Trust,
Banovallum House, Manor House St, Horncastle, LN9 5HF

© Lincolnshire Naturalists' Union, c/o The Lincolnshire Wildlife Trust, Banovallum House,
Horncastle, Lincolnshire, LN9 5HF Registered Charity Number 255645 http://www.lnu.org
ISSN 0963-0961
Printed by Cupits, The Ropewalk, 23 Louth Road, Horncastle, Lincolnshire, LN9 5ED
Edited by Nick Tribe and Chris Manning

DEC 2007

LOOKING FOR BRYOPHYTES IN LINCOLNSHIRE

Christine Rieser

This address is an account of the habitats where some of the rare and occasional bryophytes have been recorded recently.

I cannot in the space available survey the distribution of bryophyte species that are recorded in Lincolnshire but I want to convey some of the fascination of these plants, how intricately varied and delicate they are, how important they are as indicators of conditions in the field and also to give a feeling for the fun of going to look for bryophytes in a climate not too well suited to these plants.

The flora described is based on the field work of Frank Lammiman and myself and old records kept by Professor Mark Seaward (Seaward, 1983). There have been many changes in name of both genus and species due to re-evaluation of family relationships from DNA work and new names are used as in the Census Catalogue (Blockeel & Long, 1998).

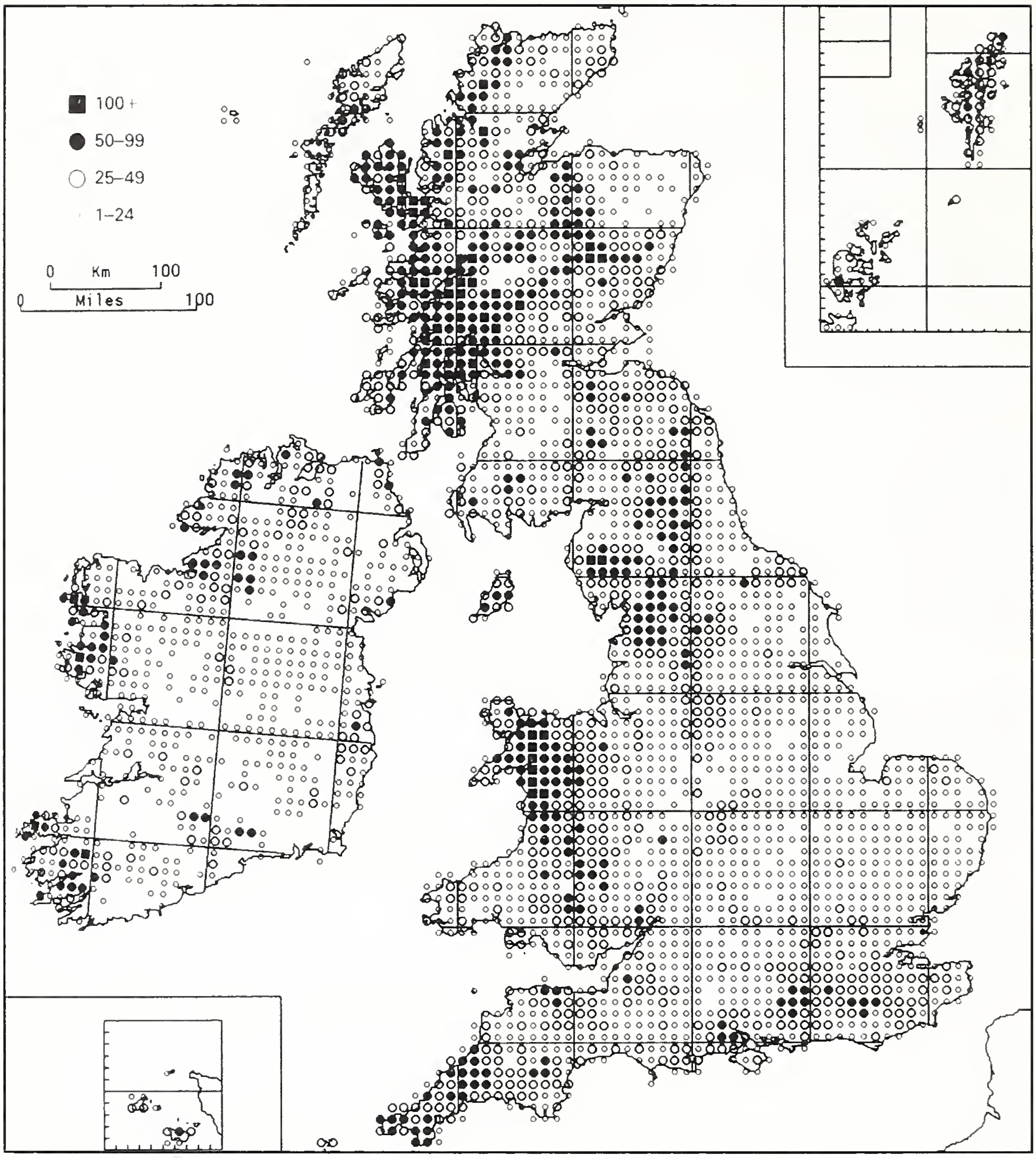
Introduction

The primitive structure of bryophytes, comprising leaves mainly one cell thick and stems without well developed water transporting cells like those present in higher plants, demands the presence of moisture for supplying nutrients directly through the leaf surface and for the movement of motile spermatozooids for sexual reproduction.

In the north and west of the country where rainfall is higher and especially where atmospheric pollution is minimal, there may be over 200 species of moss per 10-km square but in Lincolnshire most squares have less than 50 and for liverworts and *Sphagnum* spp. the difference is even greater (see maps overleaf).

Never-the-less of the 1000 or so species recorded nationally nearly 300 have been recorded here in the last 50 years and a number of species recorded here are on the recently revised list of nationally scarce species (Preston, 2006). We have to search for them but that only makes the triumph of finding them greater.

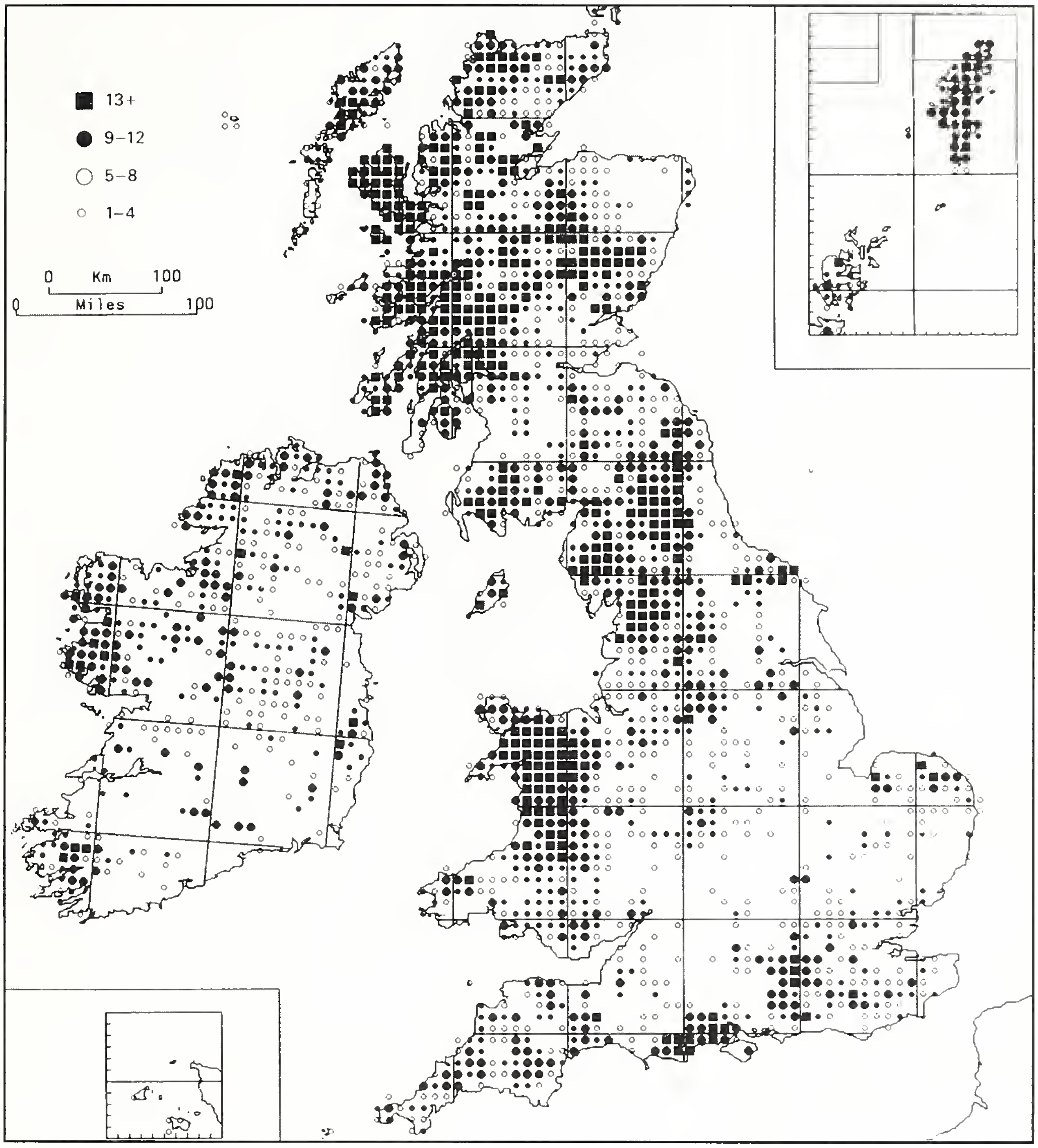
Many bryophyte species are confined to a particular habitat they can successfully colonise and thus they are good indicators of base content of soil or substrate and some are acknowledged as indicators of pollution. They have the capacity to withstand drying for some considerable time by shrivelling and curling up, with immediate recovery when moisture returns. This helps them to survive during the summer and it also helps us to collect a voucher specimen which can be stored dry until a microscope is available for definitive identification.



Distribution map for liverworts. Total number of species per 10km square. Reproduced with the kind permission of Harley Books. From Hill *et al* (1991, 1992, 1994). (Reproduced with the kind permission of Harley Books.)

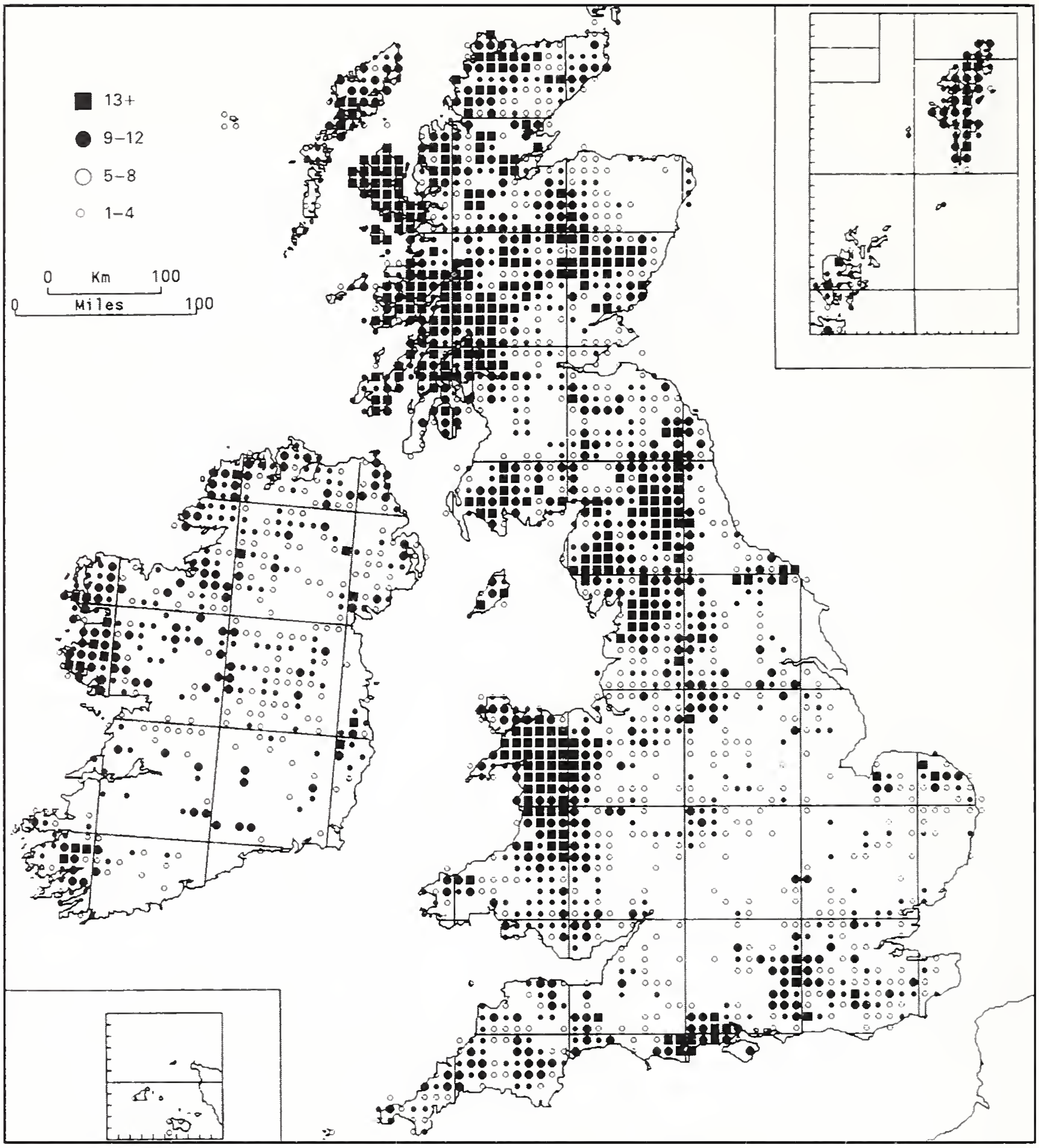
Epiphytic species

A particular instance of their acknowledged value as indicators of atmospheric pollution is the loss to most of the country of many of the epiphytic species during the early 20th century due to atmospheric pollution with sulphur dioxide and other



Distribution map for mosses except *Sphagnum* spp. Total number of species per 10km square. From Hill *et al* (1991, 1992, 1994). (Reproduced with the kind permission of Harley Books.)

industrial waste products. After the Clean Air Act of 1953, epiphytic species that had survived in the far west in the clean air coming in from the Atlantic began to spread back to the rest of the country. Old elders are an attractive site for colonising epiphytes like the *Orthotrichums* and related *Ulotas* and *Zygodons*, and other trees like willow, ash, oak and field maple especially when trees are



Distribution map for *Sphagnum* spp. Total number of species per 10km square. From Hill *et al* (1991, 1992, 1994). (Reproduced with the kind permission of Harley Books.)

leaning and water clings to their bark. So signs of return of the epiphytes were eagerly looked for in the woods. *Orthotrichum affine* was amongst the earlier epiphytes to return and later came *Ulota*, at first without the spore capsules necessary for identification of species but then in 2000 the first capsule was found on a tuft of *Ulota* on old elder in Haugham Wood and the peristome teeth surrounding the mouth of the capsule could be examined under the microscope and *U. bruchii* identified, the first in Lincolnshire. In a similar case *Cryphaea heteromalla* could be seen in coastal areas in the west but began to spread back to the east side of the country and was found first in Lincolnshire at Gibraltar

Point in 1990 by a visiting bryologist, Tom Blockeel, rather to the disappointment of Frank Lammiman who had been looking there without success. It is now occasional in a few of our woods and a valued species as indicative of cleaner air. Other epiphytic species have also been hard to find but have gradually increased in the woodlands. *Orthotrichum pulchellum*, a smaller more delicate plant than *O. affine* occurs in several woods now and *O. lyellii* which spreads by producing numerous microscopic gemmae on the leaf surface is found occasionally. *Ulota phyllantha* is not normally fertile and also has gemmae, fusiform in shape and borne in clusters. This is considered to be a coastal species and can be found on willows or elders at Theddlethorpe but has also been recorded in fourteen woodland sites although in small quantity (Plate 1). The epiphytic liverworts have also increased. *Frullania dilatata* may be seen lying against an ash trunk but the complicated leaf structure can only be seen from the underside. This species was hard to find but is now present in twenty woods. *Radula complanata* another leafy liverwort of similar folded leaf structure is recorded from nine sites mainly on field maple or ash. *Metzgeria fruticulosa* a thalloid liverwort is another epiphyte only recently recorded in Lincolnshire.

The coast

The coastal areas have a limited flora as there are only a few species that can accept the brackish conditions. In 1990 a vast stand of a small acrocarpous moss T*ortula viridifolia* was seen by F. Lammiman on the low sandy flats at the back of the foreshore at Gibraltar Point. This was exciting as it was new to Lincolnshire and very rare on the east side of the country. Since then another moss confined to the brackish habitat *Henediella heimii* has been found here and elsewhere along the coast and *Tortella flavovirens* similarly. These are all confined to coastal sites.

On the sand dunes behind the maritime marsh are those species that like the calcareous nature of the sand. *Syntrichia ruraliformis* is such a species and is only rarely found inland. *Hylocomium splendens* a handsome branched moss has its only known site in the county here. In the scrub *Syntrichia papillosa* has been recorded on elder and *Climacium dendroides* has persisted in a few damp grassy areas although recent clearing of scrub has destroyed the damp microclimate which had suited it. This handsome species is considered at risk on the east side of the country (Plate 2).

The Wolds

The woodlands on the east side of the Wolds are mainly on chalky boulder clay and some of the epiphytes already discussed can be found here. Another, *Platygyrium repens*, a moss on the current list of nationally scarce bryophytes (Preston, 2006) is to be seen on some of the ash trunks in Muckton Wood. Also, some of the less common ground mosses, leafy liverworts and plants colonising rotten tree trunks and stumps are recorded from here. *Rhytidiadelphus triquetrus* a handsome, branched moss often seen on chalk or limestone is present as a few patches on soil in Legbourne Wood and strangely with it is some *Rhytidiadelphus loreus* which is rare on the east side of the country but common on more acid soils of the west. In Hoplands Wood there is a good selection including *Homalia trichomanoides* present on a few tree bases and stumps. Here also are several good colonies of the leafy liverwort *Radula complanata* mainly on ash trunks.

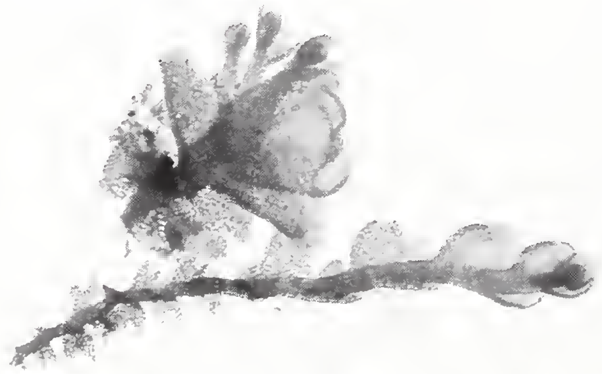
Microbryum curvicolle

The old chalk quarries have been very rewarding. The porous nature of the substrate means it cannot be colonised easily by many plants and there is bare space available for annuals to gain access. This has been successfully utilised by some of our minimalist species, the Pottiaceae. A minute plant *Microbryum curvicolle* is instantly recognisable by the curved seta, and at only 1-2mm high it is not easily spotted but worth finding. And the microscopic *Microbryum floerkeanum* is here too and not so rare if one has the eye for such minute specks on the ground. This plant was previously on the list of scarce species but has now been recorded from over 100 10 Km squares nationally and removed from that list.

The bright red capsules of *Microbryum rectum* are more attractive to the eye and can be seen here and at other chalk sites with *Microbryum starkeanum* and *M. davallianum.* Other diminutive species found growing directly on the bare chalk are the *Seligerias.*

Seligeria calcarea

S. calcarea is the commonest here although not common nationally, and *S. calycina* is occasional. The *Aloinas* are here too, *A. aloides* is at most chalk sites and the nationally rare *A. brevirostris* recorded once at Bigby Chalk Pit in 1993 by Frank Lammiman.



Leiocolea turbinata

The fine leaved *Ditrichum gracile* is present on the quarry floor in Tetford chalk pit and here also one of our more delicate leafy liverworts *Leiocolea turbinata* can be found occasionally as a translucent weft on a chalky bank. After studying the quarry floor at Mill Hill, Claxby once I stood up to find my companion had reached the top of the chalk quarry face in his search for more plants. One has to be careful what one gets drawn into when one gets hooked on these fascinating plants.

Roadside banks on chalk are good habitats for some of the larger branched mosses. One such shaded bank facing north-east at Binbrook has a good cover of *Rhytidiadelphus triquetrus* and *R. squarrosus* one of the common mosses in our lawns but another robust golden coloured moss can be seen mingling in with the rest. This is a *Hylocomium*, with red stem, furry with paraphyllia and leaves distinctly shouldered in shape, *H. brevirostre,* almost unknown on the east side of the country and certainly new for Lincolnshire in 1999 (Plate 3). As usual with something new it was sent in to the BBS recorder for verification and caused some amazement there too. Another robust moss to be found in only one of our chalk quarries is *Mnium stellare,* similar to the very common, woodland moss *Mnium hornum* but with an unbordered margin.

Steep-sided valleys on chalk have their own particular flora especially where a stream drains the valley and keeps the air moist. At Hubbards Hills, Louth, *Anomodon viticulosus* can be found on old beech trees with *Neckera complanata* and similarly on beech at Welton Vale, South Elkington with its attendant stream. These are also present on Tetford Hill roadside woodland and here *Porella platyphylla* was seen on a sycamore base and on old coppiced ash (Plate 4). This was our only recent record for a leafy liverwort common on limestone in the South and West until November 2006 when a large patch was found on an ash beside the dyke in Cocklode Wood

The Spilsby Sandstone has less to offer but visiting Silverines Meadow to see the meadow saxifrage in flower a chance look at the stream area revealed one of the hornworts just below the overhang of the stream bank. *Anthoceros punctatus,* looking like a thalloid liverwort but with the extraordinary stick-like erect spore capsules, had never been found before in Lincolnshire and was on the list of nationally scarce bryophytes before its recent review (Plate 5). The species was confirmed by examining the ripe spores under the microscope.

The Central Clay Vale

The Clay Vale west of the Wolds has some areas of cover sands and ancient heathland. Linwood Warren has a wide variety of heath species. Here *Dicranum majus* was found on a bordering bank when it had been absent from the county list for 80 years. *Dicranum spurium*, a moss listed as vulnerable nationally (Hodgetts, 2003) is here but already difficult to find and trampling by sheep may soon eliminate it. *Tetraphis pellucida* is a very attractive moss, fairly common in ancient woodlands on acidic soil and rotten stumps, usually with leafy cups full of asexually produced gemmae, but here it can be seen with spore capsules, very rarely produced and showing the four peristome teeth for which this plant is notable.

Linwood is a wet heath and has 10 species of *Sphagnum* recorded including *S. tenellum,* uncommon in midland areas. *Leucobryum glaucum* which may form tufts or balls a foot or more high is present although not as prolific as 20 years ago. Here also are some of our leafy liverworts, minute but intricately formed and delicate. *Lepidozia reptans* which has two ranks of 3 to 4 toothed leaves with a third row of minute underleaves also with 3 or 4 teeth; *Lophozia ventricosa* also minute and with broadly forked leaves having at the apex of each tooth a bunch of bright green, unicellular gemmae and *Gymnocolea inflata* with rounded forked leaves on a weft of translucent stems and with inflated perianths, all uncommon in the county. Here also the beautiful *Ptilidium ciliare* grows under the heather, usually showing reddish with three-lobed leaves, each lobe with long filaments of cells forming cilia around its margin (Plate 6). All these plants are subject to conditions prevailing and some have suffered from prolonged dry spells and trampling by sheep.

Also in the Clay Vale a constantly wet ditch at Walesby Moor has our biggest collection of leafy liverworts. The steep banks are clothed with them. *Diplophyllum albicans* with the folded back leaf-lobe looking like a double leaf is there, a prize to find in Lincolnshire though common as dirt in the west. *Lepidozia reptans, Lophozia ventricosa, Calypogeia muelleriana*, *C. fissa and Cephalozia lunulifolia* are here, the latter recorded recently for the first time in Lincolnshire and uncommon in the east.

The heathland areas of glacial sands and gravels near Woodhall Spa include some wooded areas and some wetlands. A more acid environment than the Wolds, mosses here include some *Sphagnum spp.* and some less commonly seen leafy liverworts *Cephalozia connivens*, *Lophozia ventricosa* and thalloid liverworts, *Riccardia chamedryfolia, Pellia neesiana* and *Fossombronia foveolata*, this latter being one of the nationally scarce liverworts. Also in this area the leafy liverwort *Ptilidium ciliare* can be seen in quantity under the heather

The ancient woods of the Bardney small-leafed lime group on the central clay vale tend to be more neutral in acidity and sometimes show plants associated with basic conditions and nearby with more acidity. In Southrey Wood for instance, *Eurhynchium striatum* is present, a moss characteristic of woods on chalk or limestone but in the adjoining wood Birch Wood the more acid flora includes *Polytrichum formosum, Dicranum scoparium* and *Tetraphis pellucida*. In this area also is Hardy Gang Wood which has some plants on old stumps which are of special interest. *Dicranum montanum* is one of the velvet covering mosses and *Dicranum majus*, which is very rare in the county can be found here, but of greater importance is *Dicranum flagellare* which is listed as scarce nationally. This is one of the smaller *Dicranums* and amongst the leafy shoots it has flagellate stems which break off to form new plants. It is present on a number of rotten stumps in this wood but has not been found elsewhere in the north east of the country.

Also in the Bardney small-leafed lime woods *Ptilidium pulcherrimum* has been found on ash. Always in small quantity, this is a nationally uncommon leafy liverwort similar in its finely divided leaves to the more common species *P. ciliare* already described present on heaths.

Limestone and associated areas

The limestone ridge running north/south in the county is broken in two places by the action of glacial melt water bringing sand and gravel to areas in the Lincoln Gap and the Ancaster Gap. In the Lincoln Gap we have Whisby Nature Park and Swanholme NR and most of the bryophytes here are typical acidic sand flora.

The bog at Swanholme has eight species of *Sphagnum* and one of Lincolnshire's unfamiliar leafy liverworts, *Gymnocolea inflata*. Also in the bog is one of the branched mosses of wetland and poor nutrient status, *Warnstorfia exannulatus*. In the Ancaster Gap we have some sand and gravel overlying limestone. Rauceby Warren lies here and is a valuable site. Typical calcicoles such as *Aloina aloides*, *Homalothecium sericeum* and *Syntrichia ruralis* are here but also acidophilic mosses *Polytrichum juniperinum* and *P. piliferum*. This area is also blessed with periodic inundation and has *Leskea polycarpa* on willows where branches are close to submergence. On the damp sandy levels lower down the thalloid liverwort *Riccia cavernosa*, a nationally scarce liverwort, shows here when conditions have dried out and are suitable for the germination of spores lying buried for a time in the soil.

Plagiomnium ellipticum

Sleaford Ballast Pits have some surprises for anyone brave enough to investigate the marshy environs, stepping carefully where plants have created a stable foothold and holding on to the willows for support. The marsh fern *Thelypteris palustris* is here in quantity and at the base of the fern, the moss *Plagiomnium ellipicum* was recorded in 1988 by Frank Lammiman and is still flourishing there today. Also *Plagiomnium elatum*, but that is harder to find. Both of these were new to Lincolnshire at the time although *Plagiomnium ellipticum* has since been recorded elsewhere in a typical rather wet environment. A floating thalloid liverwort, *Ricciocarpus natans* is there too. This is also rare in Lincolnshire and is on the list of nationally scarce bryophytes.

At Copper Hill, Dukes Covert and Wilsford Verge and Cliff the underlying limestone gives a habitat for calcicoles such as *Encalypta streptocarpa*, *Ctenidium molluscum*, *Weissia brachycarpa v. oblique*, and *Homalothecium lutescens*. *Encalypta vulgaris* shows here with the capsule enveloped in the long cylindrical calyptra indicative of the genus . This has been seen here but was found in quantity on a limestone church wall at Grayingham (Plate 7). It is rare in the county. On limestone walls *Orthotrichum* anomalum is often found and occasionally *O. cupulatum*. *Schistidium apocarpum* presents its bright orange capsules to the sharp eye.

Other limestone areas include Clapgate Pits which has almost our only site for *Tortella tortuosa,* a common curled up moss in calcareous sites in the north and west, and *Tortula subulata*, a moss larger and more distinctive than the common *Tortula muralis*. In Rowland Plantation near here a very attractive and nationally scarce moss *Rhodobryum roseum* (Hodgetts, 2003) (Plate 8) was seen in 1989 by Frank Lammiman but it has not been seen recently. It likes a calcareous sandy soil but here the site has grown up with dense bracken under conifers.

Bagmoor Gullet is an interesting area on old open cast ironstone with calcareous water running through it. Here a tufa-forming moss, *Didymodon tophaceus* is found with *Palustriella commutata var falcata*, *Bryum pseudotriquetrum* and the robust *Fissidens adianthoides*.

Morkery Wood with its old limestone quarry has some good lime-loving plants too such as *Campylium stellatum v. stellatum* and *Encalypta streptocarpa. Calliergonella lindbergii* has been recorded here.

Springs and rivers

Moving on to a look at the springs and rivers, Claxby Spring in the chalk Wolds has a fine show of *Eucladium verticillatum*, a tufa-forming moss in a typical habitat where water runs permanently over a vertical calcareous wall of rock. This is uncommon in the county but can also be seen by the Slea Canal at Haverholme. Also at Claxby we have *Amblystegium tenax,* a moss of calcareous stream banks related to the common *A. serpens* but only recorded occasionally in the county. It is present at Tetney Blow Wells where we also have the common water moss *Fontinalis antipyretica*.

The River Trent at Marton is tidal and subject to considerable changes in water level. The area of willows and alders along the bank has particular mosses which grow only where they will be subject to occasional submergence. This is the only site in Lincolnshire for *Cinclidotus fontinaloides* on rocks of mine waste, *Schistidium rivulare* also on rocks and *Orthotrichum sprucei* has been found on willows, this latter was on the list of nationally scarce species. Also at this site is *Leskea polycarpa* on willow and *Tortula latifolia* found only at one or two other sites of similar periodic flooding.

Sands of the Trent Vale

In the Laughton Forest and Scotton Common area we have a more acid heathland with six species of *Polytrichum* including the taller of the mosses, *Polytrichum commune* and *P. strictum* from bogs and *P. longesetum*. Also there are a few liverworts uncommon elsewhere in Lincolnshire, namely *Fossombronia foveolata, Jungermannia gracillima, Riccardia chamedryfolia* and *R. multifida*.

At Langholme Sand Quarry two thalloid liverworts were seen recently spread over a few square meters on the flat damp sand where little else could grow. Both were new to the county and both are on the revised list of nationally scarce bryophytes. They are *Riccia beyrichiana* and *Fossombronia incurva*.

At Messingham Sand Quarry there is a supply of calcareous water in the north-west which fostered the growth of our only example of a *Philonotis*. *P. calcarea* was first recorded in1994 by F. Lammiman and was present until 2002 but sadly it succumbed to encroaching alder.

Isle of Axholme

At Epworth Turbary we had the first record in North Lincolnshire for the leafy liverwort *Lophocolea semiteres* which has only recently arrived in this country and it was seen here to be growing so vigorously that it had reached eye-level on a willow although essentially a ground plant.

And then of course we have the peat moors of Crowle with their *Sphagnum* and associated acidophiles. *Sphagnum* is the most commercially valuable of the mosses. It is a very specialised form of moss with a cell structure that allows it to act like a sponge and hold large quantities of water, up to 20x its own weight. Seen under the microscope the narrow green photosynthetic cells are separated by large empty hyaline cells having pores to allow water to fill up and pass between the cells. This faculty of *Sphagnum* allows it to continue growing at the apex while the lower stem and leaf cells are dying and becoming peat. Acid radicals produced by *Sphagnum* diffuse into the substrate preventing most other plants growing there, and thus the bog is self-sustaining as long as the water level is maintained. We have 13 species of *Sphagnum* recorded in Lincolnshire none of which are rare nationally.

Bryophytes are important wildlife species and not "just moss" as TV presenters have a way of saying. Their importance has begun to emerge and authorities asking for lists of fauna and flora are now including bryophytes in their demands Historically bryophytes have been recorded in vice-counties since the 19th century but after 1945 with renewed interest in natural history and moss recording the British Bryological Society established a procedure for registering new vice-county records only supported by a voucher specimen and in the 1960s recording in county divisions was replaced by Ordnance Survey National Grid references in 10-km squares or tetrads (Hill *et al*, 1991, p.18). Distribution maps are naturally dependant on the number of people working in an area and in Lincolnshire very little recording was done between the 1930s when G.H. Allison worked here and 1988 when Frank Lammiman started to record.

Some new work has revealed that a minute moss called *Aphanorhegma patens* may have the capacity to produce therapeutic antibodies for the treatment of deep vein thrombosis (Porley and Hodgetts, 2005). This moss has been recorded from 3 sites in Lincolnshire but in very small quantities. If this work progresses the moss might be grown in deep culture rather as antibiotics were first made sixty years ago. The hunt is on for other bryophytes producing complex molecules which may be of use medicinally.

In the natural world moss is important for housing a vast number of microscopic creatures varying from single cell organisms to rotifers, microscopic crustaceans, insect larvae, nematodes and the like, all of which form the basis of the food chain for larger insects, frogs, small mammals and birds.

References

BLOCKEEL, T.L & LONG, D.G., 1998. *A Checklist and Census Catalogue of British and Irish Bryophytes.* British Bryological Society
HILL, M.O., PRESTON, C.D. & SMITH, A.J.E., 1991. *Atlas of the Bryophytes of Britain and Ireland.* Vol.1 Harley Books
HILL, M.O., PRESTON, C.D. & SMITH, A.J.E., 1992. *Atlas of the Bryophytes of Britain and Ireland.* Vol.2 Harley Books
HILL, M.O., PRESTON, C.D. & SMITH, A.J.E., 1994. *Atlas of the Bryophytes of Britain and Ireland.* Vol.3 Harley Books
HODGETTS, N., 2003, *Bulletin of the British Bryological Society.* 80:52-59
PORLEY, R. and HODGETTS, N., 2005 *Mosses and Liverworts.* Collins
PRESTON, C.D., 2006, A revised list of nationally scarce bryophytes. *Field Bryology* 90: 22-30. British Bryological Society.
SEAWARD, M.R.D., 1983. *A bryophyte check-list for Lincolnshire.* Lincolnshire Natural History Brochure No.4. University of Bradford

MR PYE'S SHELL COLLECTION

P.J.A. Pugh

Preamble

One dark November afternoon in 2001 I was walking Dr. Roger Key of English Nature back to his car after he presented a particularly well-illustrated lecture to our students at Anglia Ruskin University (then Anglia Polytechnic University) on managing habitats for woodland invertebrates. I commented on the quality of his macro-photography which as it transpired, was not just a tool of his trade but also his principal 'hobby'. By way of reply, I confessed to being a conchologist or shell collector.

Roger stopped for a moment and then explained that he was a member of the Lincolnshire Naturalists' Union – a group of professional and amateur biologists with a keen interest in natural history. The LNU was facing a slight problem in that all of the Lincolnshire natural history collections were in temporary storage while the Lincoln City and County Museum was being demolished and replaced with a building somewhat smaller than the original. The problem was that the new downsized museum would not be able to house all of Lincolnshire's natural history collections and those 'of little importance to Lincolnshire' would be offered to other museums and those that failed to find a new home would simply 'have to go'. A 'Victorian gentleman's shell collection' refused by all other museums and currently stored in an old warehouse due for imminent demolition was of particular concern. So when asked if I was interested in rescuing this shell collection from landfill I immediately replied 'Yes!'.

Waterside South

One January 2002 morning I was in my office and picked the ringing telephone to be reminded by Roger Key that some of the Lincolnshire Naturalists would be meeting at the Waterside South warehouse in Lincoln next Saturday morning. Perhaps I would like to be there to 'make arrangements for the removal of the shell collection'?

So early on the Saturday morning I cycled into Cambridge from my (then) temporary lodgings carrying empty 60 litre and 20 litre rucksacks. I was under the impression that, like most Victorian collections, this would be a small display cabinet with glass-topped drawers each about the size of an A4, or at most, A3 sheet of paper. I boarded trains to Peterborough then Lincoln railway station from where I walked to Waterside South. Here I was greeted by members of the LNU on the first floor of a large Victorian warehouse that was in the process of being 'recycled' and, after a few polite exchanges, ushered into a large windowless room illuminated by strip-lights dangling from loose wiring. The LNU members got on with the task of sorting through an impressive number of boxes housing records and specimens of stuffed birds of national importance while I was pointed in the direction of the shell collection. Here I stood in front of five plain wooden cabinets each about 1.5m high, 0.5 m wide, 0.8m deep and containing twelve open-fronted wooden drawers. My immediate thought was that this was a little larger than I had anticipated!

A quick inspection revealed that all 60 drawers within the cabinets contained shells, lumps of coral and some written material. Some of the shells were laid out in small, labelled trays though most of these clearly bore little information relevant to the specimens they contained, other shells were on a 2cm deep layer of sand or a combination of sand in labelled trays. The two most laden cabinets were evidently too heavy or damaged to have been pushed across the rough plank floor and so were rolled end-for-end to their final resting-place. Both contained a jumble of mostly broken shells. After several years in the warehouse above a car repair workshop everything, including the open-fronted cabinets, shells and paperwork, was coated in a thick layer of industrial grime. It was not broken shells and contamination that immediately focused my attention but the sheer size of the collection. Clearly my two rucksacks were going to carry only a tiny fraction so I decided to remove anything that looked potentially interesting in case I could not return to complete the salvage. I spent the next few hours looking through the drawers and cherry-picking the potentially unusual or rare shells for immediate rescue and packed them into three grimy boxes. I then wrapped the boxes in clean plastic bags, loaded them into my rucksacks and I headed back to Cambridge on the next train.

My new house was in the middle of refurbishment and thus uninhabitable, while most of my worldly goods were in storage pending the move, so I was in temporary shared accommodation and living out of a suitcase. I made myself rather unpopular with my housemates by seconding all unused buckets and bowls in which to clean the few shells I had rescued. I had very low expectations regarding the outcome of my salvage operation though my pessimism was quite unfounded as all shells appeared to respond very well to a long soak in very soapy water, gentle cleaning with a washing-up brush, more soaking, prolonged rinsing and air-drying. Indeed some of the specimens were sufficiently restored to warrant a full-scale rescue for the rest of the collection.

Rescue and Maintenance

I am a habitual pedestrian and cyclist but persuaded Dr. Martin Davey, a friend from the British Antarctic Survey in Cambridge, to chauffeur me to Lincoln in his four-by-four and assist in the rescue. So we set off early one Monday morning armed with plastic sacks and 20 large, flat, cardboard fruit-delivery trays from the local Tesco to carry off the remaining majority of the collection. I had downloaded navigation instructions from the internet and managed to negotiate the route, the City of Lincoln one-way system and arrived at Waterside South where Allan Binding of the LNU let me into the warehouse. Time was very short and so all of the shells, loose labels, some hand-written index cards and two hand-written log-book ledgers were unceremoniously tipped into the fruit trays and loaded into the four-by-four. Early that evening the whole ensemble was stacked on the floor of the new ‘Fort Pugh’ conservatory.

Restoration, storage and archiving

That was the easy bit done. The next stage of the rescue was painstaking and time consuming as the following procedure was repeated on four-day cycles over four months. Enough shells were removed from one fruit tray to quarter-fill a 10 litre plastic storage box where they were soaked for 24 hours in diluted industrial degreaser fluid. Shells were then rinsed in warm water, gently scrubbed with a washing-up brush in a large bowl of warm soapy water, transferred to clean soapy water for 24 hours, scrubbed again, rinsed under a cold tap then allowed to stand in clean tap water for a further 24 hours. After a final rinse the shells were air-dried on a conservatory bench lined with 5 mm of newspaper, a layer of kitchen paper and covered with a further 1 cm of newspaper insulation. This slowed down the drying to about five days and reduced the chances of shells becoming ‘crazed’ or cracked. I made no subsequent attempt to ‘restore’ shells other than wiping some of the very worn or faded land snails with light cycle oil and kitchen paper to revive some of their natural gloss.

The next problem was housing 6000 shells. Wooden museum cabinets proved to be too expensive, too large for a small house and too heavy for a first floor room without adequate floor support. The solution was nine, 1.5 m high, A3 footprint, steel filing cabinets housing 15, 50, 80 or 120 mm deep drawers which were much lighter, less cumbersome and contained much less ‘dead space’ than wooden museum cabinets. Shells from the same fruit tray were housed in a common set of cabinet drawers lined with newspaper and kitchen paper accompanied by a label so their source tray could be identified.

Shell restoration and data collection ran simultaneously. Each fruit tray contained lots of sand, shell, debris, various labels and scraps of paper that were either stuck to small display boxes, inserted into shells or loose in the debris. All of these were retrieved and stored in polythene bags numbered as per tray from which they originated. Once shell cleaning had been completed the labels were sealed onto plain paper with wide clear tape to isolate any contamination whilst the data were entered into a computer spreadsheet. Separate files were set up for the 200 or so loose index cards, each of the two log books and the labels found in each numbered fruit tray. Each file containing four data fields (columns) of genus, species, ‘other data’ – usually location and origin (index cards, log book/ tray number), was alphabetically sorted, duplicate records removed and the contents dropped into a single large database. This database was duplicated and sorted alphabetically, one by generic name and the other by species name. Such cumbersome administration is absolutely necessary as (in theory) it allows all of the written data to be ascribed to the correct shell. A fine theory that was merely confounded by the reality of 318 records remaining ‘unresolved’ after three years of careful scrutiny!

So all of the shells were cleaned, stored, being identified and matched with the appropriate archived data. But neither shells nor data say anything about the collector. So who was he?

Alfred William Pye

The scant amount of printed matter that was rescued with the collection yielded few, but essential, clues. There was a small 8”x12” placard saying ‘Donated by Hannah Pye’ that may have fronted a display of the collection in Lincoln City and County Museum while one of the copper-plate hand-written alphabetically-indexed log books had ‘Alfred William Pye’ pencilled on the flyleaf. Yet, none of the printed material contained a date, addresses or any other support information. Around this time Dr Toby Carter, president of the Cambridge Natural History Society, friend and colleague, was tracing his family tree using the on-line UK census. Having run out of ancestors to trace Dr. Carter ran a quick search for

Alfred William Pye and found him on the first search page. A few clicks later and some of his details came to light.

In 1901 Alfred William Pye was living at 63 Hainton Street in the parish of Clee near Grimsby, Lincolnshire. He was employed as a County Court Clerk and married to Hannah Pye (which corroborated the aforementioned placard and confirmed we had the correct Pye). Both were aged 40, born in 1861 in Staffordshire and had two sons, Leonard W. (age 14) and Bernard A. (age 13) born in Staffordshire in 1877 and 1878 respectively. The Pye family also employed a live-in servant, Elsie Blackstone, aged 17 and born in Devon in 1874.

In January 2002 I presented a talk on the Pye Collection to the LNU, who kindly allowed me to rescue the shells, when I made a plea for any information on William Pye. Rex Johnson, a past president of the LNU had the 1881 Census on CD ROM from where he accessed further useful information. Alfred William, then aged 20, was employed as a clerk of the court and living at Castle Church, Stafford with his father, William Pye (a wine merchant and cellarman, aged 52), mother Jane (aged 51) and his sister Clara (aged 18).

And then the trail goes cold. Searches of other census databases may indeed add something more about Pye himself but such information will say nothing about his shells. It is this dearth of information that represents the major problem of the Pye Collection.

Provenance

A natural history collection may have two possible values; first there is economic value, which is not appropriate to a collection that has suffered the privations of a rough life and now worth less than the steel filing cabinets in which it is housed. Then there is scientific value or 'provenance', which describes any useful information of which the base-line essentials include precise location, habitat details, collector's name and date. Provenance may be written on labels attached to the specimen, on card or paper placed in the same container, or written in a separate log-book containing catalogue numbers which are themselves scribed on each specimen in indelible Indian ink. The Pye collection lacks virtually all useable scientific provenance. Two freshwater bivalves are listed as being from named North American rivers but such precision is exceptional and other records are listed in the broadest possible geographic terms such as 'Mexico' or even 'Pacific Ocean'. None of the data salvaged mentions names of collectors or suppliers. Over half the collection lacks any provenance at all while the hand-written copper plate logs are neither signed nor dated. Indeed I have failed to find reference to any calendar dates or even year anywhere in the collection. This lack of adequate provenance along with the grime and damage is why the Pye Collection was not added to the National Collection nor rescued by any of the major museums. So where does the Pye Collection come from?

Origin of the Pye Collection

One of Pye's logs contained two important clues as to the origin of his shell collection. The first is an (undated) illustrated catalogue by Walter Webb of Rochester, New Jersey, USA for shells of Philippine Island land snails, some of which are represented in the collection. The other was a series of loose pages torn from a ledger listing land snails from The Ferraby Collection in a different, but equally neat hand to that written in the two logs. The implication, that Pye purchased other smaller collections, is corroborated by a number of marine shells being stuffed with pencil labels written in a third distinct hand and the index cards alluded to earlier written in a fourth. But beyond that there is pure conjecture.

All land snails are from northern South America, Central Africa, the Philippines and some of the South Pacific Islands, while most marine shells come from East Africa, New Caledonia, the Caribbean and Central West America (Mexico and California). Many of the New World (American) species are represented by multiple lots of less than best quality suggesting they may have been collected by Pye himself or an intermediary other than a dealer who would normally supply only top quality fine (F/ F+ /F++) or gem (G) grade shells. Again lack of adequate provenance closes off this line of research.

The Pye Collection today

A total of 6000 shells salvaged were from Waterside South of which 500 good quality duplicates were donated to the Anglia Ruskin University Department of Life Sciences where they form a useful teaching and study aid. A further 2000+ duplicate and damaged shells were given away to children at the 83rd and 84th annual Conversazione of the Cambridge Natural History Society in 2002 and 2003. I kept 3200 shells for my own collection where they are identified via unique catalogue numbers together with the entries ‘Collector: AW Pye (Lincoln)’ and ‘Acquisition date: 2/2002’.

I spent nine months identifying the shells from the Pye Collection using my own identification books, then in late 2003 I moved my own collection from my parents’ house in West Wales to my new Cambridge home where all of the shells were amalgamated into the new Pugh Collection. All shells were then re-sorted so that individual storage drawers housed particular mollusc families or genera. It then it became apparent that the two collections contained numerous conflicting identification details. So in summer 2004 I started to re-examine every shell in the collection, rechecked identification using the most recent books, journal articles and internet-based guides. This latest round was completed in spring 2005 when the Pugh Collection log was completely revised. It is now time to upgrade the storage system! At present all shells sit on newspaper and kitchen paper. I want to line metal drawers with the small open cardboard display boxes used in museum collections but the cost of lining 100+ A3 drawers in this way will cost at least £4000. Naturally I am naturally looking for a less extravagant alternative.

Pye’s ‘Star-Shells’

Pye amassed an impressive collection of (to date) 1740 identifiable species, sub-species and varieties. These include 250 bivalves (Bivalvia/ Lamellibranchiata), only 87 cowries (Cypraeidae), but 216 (largely) tropical land snails and 110 cone shells (Conidae) which is about half the number of known Conidae circa 1900. He collected some ‘stars’ of the Victorian shell collector. First is a trio of golden cowries, *Cypraea aurantium*, which are the ‘badge’ of a Fijian chief, two of these had been ‘drilled’ suggesting they were once part of, then removed from, a ceremonial object. But it was the land snails that first grabbed my attention and Pye obviously focused on the architectural curiosities including the up-mouth snail, *Anostoma ringens* from the Amazon rain forest, its incredibly elongate and (for a land-snail) cumbersome relative the megaspire snail, *Megaspira ruschenbergiana*. He also collected numerous heavy-weights of the aptly named African giant snails (Achatinidae), mega-snails (Strophochelidae) and the small tropical island snails of the family Partulidae of which he had several 'lots' of 5 to 10 specimens. These snails are now critically endangered by habitat destruction while three other Pye land snails *Dyakia clypeus*, *Hemiplectus neptunus* and *Megalophaedusa yokahamensis* are now extinct. Unfortunately the lack of any relevant collection data makes them merely interesting trophies as opposed to scientifically valuable specimens.

Finally there are a number of unexplained oddities. Pye most likely bought all of his shells from dealers, so how did he obtain some specimens such as Prampart's cone, *Conus barthelemyi leehmani* remains unexplained. This sub-species was not discovered until 1979 long after Pye was most probably dead – unless of course he lived to, and was still collecting at, the age of 118!

Was it worth it?

When I took on Alfred William's collection it was dirty, damaged and lacking adequate provenance. And I appreciate that the hundreds of hours spent on restoration, collating written information, matching this with the correct shells, agonising over correct diagnoses, and then logging all the names, data and the modern systematic details into a computer database hardly equates to 'joy' for most people. But I am a collector, and restoring/ collating/ identifying/ classifying/ database managing is what collectors do. This is why I did not hesitate at taking the collection on and treated the epithet 'of little importance' was something of a challenge rather than a deterrent.

Now that renovation is largely completed it has become apparent that Pye's collection is of similar size to my own yet only 25% of species are common to both collections. I obtained my shells from beaches, gift shops, dealers in Exchange & Mart or, more recently, e-bay while Pye amassed his from 19th Century dealers. The result is a very different collection that was collected in a far away time and very different place, justification enough to rescue and restore Mr. Pye's shells.

Acknowledgements

I am grateful to the following for their help in rescuing the Pye Collection – Dr. Roger Key, Lincolnshire Naturalist's Union and English Nature (for securing the Pye Collection), Allan Binding, LNU for access to the collection, Rex Johnson, LNU for information from the 1881 Census, Dr. Toby Carter, Anglia Ruskin University for information from the 1901 census and Dr Martin Davey, University of Luton, for logistical support.

P.J.A. Pugh p.j.a.pugh@anglia.ac.uk, Department of Life Sciences, Anglia Ruskin University, East Road, Cambridge CB1 PT1.

THE WASPS (HYMENOPTERA: ACULEATA) OF WATSONIAN LINCOLNSHIRE. 4. Chrysidoidea, Tiphiidae, Mutillidae, Sapygidae and Vespinae

Michael Archer

This is the fourth and final paper on the aculeate wasps of Lincolnshire. Gauld and Bolton (1996) and O'Neill (2001) give an introduction to these wasps. The BWARS Members' Handbook (Archer, 2004) should be consulted for the available keys to the species. The current major sources of species information are the Provisional Atlases of the Bees, Wasps and Ants Recording Society (BWARS). These atlases provide a national distribution map and detailed natural history for each species. These atlases are not yet complete, but the relevant atlas will be indicated as each species is considered.

This paper considers 273 records of 34 species where a record represents a specimen differing in one of the following three variables: name, sex and day-date of capture or observation. These records were made by 37 recorders from 61 sites. The recorders were: M.E. Archer (MEA), A. Brackenbury (AB), H. Britten (HB), A. Brownlow (ABL), J.T. Burn (JTB), R.T. Casal (RTC), D.K. Clements (DKC), J. Davison (JD), W.A. Ely (WAE), A. Faulkner (AF), J.P. Flynn (JPF), A.P. Fowles (APF), C.F. George (CFG), R. Goy (RG), A. Godfrey (AG), M.W. Graham (MWG), D.S. Hill (DSH), W.G. Hoff (WGH), B.A. Hopkins (BAH), J. Hutchinson (JH), H.P. Jones (HPJ), P. Kendall (PK), R.S. Key (RSK), A.S. Lazenby (ASL), W. Lewington (WL), P. Porter (PP), Preston (P), S.P.M. Roberts (SPMR), K.D. Robertson (KDR), E. Shaw (ES), D. Sheppard (DS), C. Smith (CS), R.W.J. Uffen (RWJU), D. Whiteley (DW), P. Wilson (PW), E.A. Woodruffe (EAW), P.F. Yeo (PYY). The sites with grid references and Natural Areas (Weaver, 1988) are given in the appendix. The sites are distributed among the Natural Areas as follows: North Lincolnshire Coversands & Clay Vale (29), Lincolnshire & Rutland Limestone (9), Lincolnshire Coast & Marshes (7), Trent Valley & Rises (6), Lincolnshire Wolds (5), The Fens (4), Humber Estuary (1).

For each species the records are given in site alphabetical order. Abbreviations are used for the following sites: Gibraltar Point (GP), Rauceby Warren (RW), Risby Warren (RIW), Kirkby Moor (KM), Manton & Twigmoor (MT), Messingham Sand Quarry (MSQ), Old Bolingbroke (OB), Saltfleetby-Theddlethorpe Dunes (STD), and Tattershall Sand Pits (TSP). The year of some of the records of M.W. Graham are not known so are given as 1941, the year in which these records were published. The records of C.F. George are given as pre-1889 and have been entered as 1888. The Red Data Book (Shirt, 1987) and National Notable or Scarce (Lists Na and Nb) (Falk, 1991) statuses with Archer National Statuses (ANS) (Archer, 2002) are given, as appropriate, for each species. The Archer National Statuses updates the statuses of Shirt and Falk besides giving a status to each of the common and widespread species. The Very Rare ANS is equivalent to Red Data Book status, the Rare ANS to Na status and the Scarce ANS to Nb status. The ANS Universal and Widespread statuses refers to the common and widespread species. No ANS are given for the Dryinidae and Bethylidae because these two groups have been little recorded. The ANS have also not been applied to the social wasps (Vespinae). Small size refers to species about 3-6mm in length, medium-size species about 6-10mm in length and large species over 10mm in length.

Of the 20 species on the Lincolnshire list with an ANS seven species have a Universal status, six species a Widespread status, six species a Scarce status and one species, *Cleptes nitidulus*, a Rare status. *Cleptes nitidulus* was last recorded during 1942 and may now be extinct.

Family DRYINIDAE

Very small solitary wasps. Black, sometimes with lighter colours, e.g. brown, yellow, ivory, white. Males are winged. Females may be winged, wingless or with reduced wings. The fore tarsi of the females, except *Aphelopus*, are chelate. The adults are active from April until September, but mainly during the summer months. They are parasitoids on nymphal, rarely adult, Auchenorrhyncha Homoptera of the families Cicadellidae and Delphacidae. The female approaches the host which is gripped either by the chelae or, for *Aphelopus*, by the fore and middle legs. The host is stung into temporary paralysis. An egg is laid between two of the host's abdominal segments. The host normally recovers and continues to move about. The egg hatches into a larva which feeds on the host. Feeding may be externally on or internally within the host. Later instars may develop outside the host within a sac, projecting from the abdomen of the host. The sac is formed of the cast skins of the developing larva. For *Aphelopus* the sac consists of a proliferation of the host's tissue and cast skins. The sac is often different in colour from the host. The larva eats out the contents of its host resulting in its death. The larva pupates in the soil or on the food plant of the host. The cocoon is made of very dense silk. Over-wintering is usually in the pupal stage. There may be one or two generations a year. Nationally: 7 genera with 34 species, 3 genera and 5 species in Lincolnshire.

Genus **Aphelopus** Dalman, 1823

Aphelopus serratus Richards, 1939. 1 record. 12 July. Welton Wood, 1988, JTB.

Genus **Anteon** Jurine, 1807

Anteon brachycerum (Dalman, 1823). 1 record. 20 May. MT, 1989, WAE.

Anteon fulviventre (Haliday, 1828). 1 record. 12 July. Welton Wood, 1988, JTB.

Anteon jurineanum Latreille, 1809. 1 record. 20 May. MT, 1989, WAE.

Genus **Gonatopus** Ljungh, 1810

Gonatopus clavipes (Thunberg, 1827). 2 records. 9 June-25 Aug. GP, 1991, JTB; RW, 1996, APF.

Family BETHYLIDAE

Very small solitary wasps. Males winged, rarely reduced. Females winged, wingless or with reduced wings. Adults usually black. The adults are active from April until October, but mainly during the summer months. They are external parasitoids on beetle or lepidopterous larvae. The host is rapidly paralysed and may be killed. It may be dragged or carried to a concealed place, or may already be in a concealed place, e.g. within rolled leaves or under bark. One or more eggs are laid on the host. The female may feed on the haemolymph that oozes from the sting punctures. The larvae feed externally on the host. The female may stay with the larvae until they mature. More than one generation may be reared on a large host. Females probably over-winter as adults. Nationally: 8 genera with 15 native species, with a further species restricted to the Channel Islands, and several introduced species associated with granaries and storehouses, 1 genus with 2 species in Lincolnshire.

Genus **Bethylus** Latreille, 1802
Bethylus cephalotes Förster, 1860. 2 records. 5-31 July. Crosby Allotments, 1980, JTB; RIW, 1985, JTB.
Bethylus fuscicornis (Jurine, 1807). 2 records. 5 July-25 Aug. GP, 1991, JTB; RIW, 1985, JTB.

Family CHRYSIDIDAE

These solitary wasps are often called cuckoo, or ruby-tailed, wasps. They have a heavily-armoured, brightly-coloured cuticle. The apical gastral segments have been modified to form a thin, tubular structure that can be telescoped into the hind end of the gaster. In the female this tubular structure has been secondarily modified to act as an ovipositor. They have a parasitic life-history.

Subfamily Cleptinae. Genus **Cleptes** Latreille, 1802

Small brightly coloured wasps. The female has four visible gastral segments and the male five visible segments. The female searches for the cocooned prepupa or pupa of a tenthredinid sawfly. On finding a host cocoon the female bites a small hole in its wall. She then inserts her ovipositor and lays a single egg on the prepupa or pupa. The hole is sealed with mucilage and the larva, on hatching, feeds on the host. Nationally: 1 genus with 2 species, both recorded from Lincolnshire.

Cleptes nitidulus (Fab., 1793). RDB3, Na, ANS Rare. Edwards & Broad, 2006. 1 record. 21 June. Grantham, 1942, HB.
Cleptes semiauratus (L., 1761). Nb, ANS Scarce. Edwards & Broad, 2006. 3 records. 17 June-9 July. Grantham, 1950, HB; MSQ, 1992, MEA; OB, 1941, MWG.

Subfamily **Chrysidinae**

Small to medium-size wasps. Cuticle brightly metallic-coloured which may be purple, blue, green and red. The female and male have three visible gastral segments. Their hosts belong to aculeate subfamily Eumeninae and family Sphecidae. The hosts nest in the ground, in cavities in wood and in mud cells attached to a firm structure such as a wall. The female enters the host's nest and lays an egg in each available cell. On hatching, the larva usually eats the egg or young larva of the host, before the food store (cleptoparasitic life-history). In some species the larva feeds only on the larva of the host and eventually kills it (parasitoid life-history). Adults can adopt a rolled-up defensive posture when threatened. Nationally: 11 genera with 25-31 species, 6 genera with 9-13 species in Lincolnshire.

Genus **ELAMPUS** Spinola, 1806
Elampus panzeri (Fab., 1804). ANS Widespread. Edwards & Broad, 2005. 1 record. 2 Aug. RIW, 1987, RSK.

Genus **PSEUDOMALUS** Ashmead, 1902
Pseudomalus auratus (L., 1758). ANS Universal. Edwards & Broad, 2005. 6 records. 9 June-21 July. GP, 1992, MEA; Grantham, 1952, HB; Grimsby, 1980, JPF; OB, 1941, MWG; Redbourne, 1994, AG.
Pseudomalus violaceus (Scopoli, 1763). Nb, ANS Scarce, Edwards & Broad, 2005. 2 records. 6 June. Blankney Fen, 1992, ASL; OB, 1941, MWG.

Genus **HEDYCHRIDIUM** Abeille de Perrin, 1878
Hedychridium ardens (Latreille *in* Coquebert, 1801). ANS Universal, Edwards, 1998. 21 records. 24 May-30 July. GP, 1993, 1997, MEA; KM, 1995, MEA; Laughton Common, 1996, RWJU; MT, 1989, MEA; MSQ, 1993, 1999, 2000, MEA; RW, 1995, 2003, MEA; RIW, 1984, 1987, MEA; STD, 1984, 1995, 1996, 1998, MEA; Tattershall Pits, 1997, AG; TSP, 1994, 1995, AG.

Hedychridium cupreum (Dahlbom, 1845). Nb, ANS Scarce, Edwards & Telfer, 2001. 3 records. 10 June-2 Aug. MT, 1989, MEA; RIW, 1987, RSK; TSP, 1994, AG.

Genus **HEDYCHRUM** Latreille, 1802

Hedychrum niemelai Linsenmaier, 1959. RDB3, ANS Scarce, Edwards & Telfer, 2002. 1 record. OB, 1941, MWG.

Genus **CHRYSIS** L., 1761

There is much confusion as to the number of species in this genus. In Britain the number varies from 14, including 1 species restricted to the Channel Islands (Morgan, 1984) to 8 species (Kunz, 1994). Kunz (1994) synonymises seven species in Morgan (1984) to one species.

Chrysis angustula Schenck, 1856. ANS Widespread. 11 records. May-21 Aug. GP, 1991, 1992, 1993, 1994, MEA; Grebby, 1988, WGH; Grimsby, 1990, JPF; MSQ, 1990, 2001, MEA; OB, 1938, 1992, MWG; RW, 2002, MEA.

Chrysis ignita (L., 1758). ANS Universal. 15 records. 24 May-13 Aug. Blankney Fen, 1992, 1998, ASL; GP, 1990, 1992, 1996, MEA, 1990, 1995, DSH; Grebby, 1988, WGH; Grimsthorpe Park, 1995, AG; KM, 1996, MEA; STD, 1984, MEA.

Chrysis impressa Schenck, 1856. ANS Universal. 10 records. 14 May-13 Aug. GP, 1993, 1995, MEA; Grebby, 1988, WGH; KM, 1994, 1995, MEA; RW, 1993, 1996, MEA; STD, 1984, MEA, 1995, DW.

Chrysis mediata Linsenmaier, 1851. ANS Widespread. 2 records. 17-21 July. Chambers Plantation, 1974, AB.

Chrysis ruddii Shuckard, 1836. ANS Universal. 2 records. 27 May-16 July. KM, 1990, 1996, MEA.

Chrysis rutiliventris Abeille de Perrin, 1879. ANS Universal. 1 record. 21 July. GP, 1997, MEA.

Genus **TRICHRYSIS** Lichtenstein, 1876.

Trichrysis cyanea (L., 1758). ANS Universal, Edwards & Broad, 2006. 11 records. 12 June-16 Aug. Ashing Meadows, 1990, PW; Blankney Fen, 1995, ASL; GP, 1997, MEA; Grantham, 1952, HB; KM, 1995, MEA; Kirby-on-Bain, 1991, ASL; Linwood Warren, 1998, PW; MSQ, 1992, MEA; OB, 1941, MWG; RW, 1995, MEA.

Family TIPHIIDAE Subfamily **Tiphiinae**

Genus **Tiphia** Fab., 1775

Small to large, black, solitary wasps. The larvae of these species are parasitoids on scarabaeid beetle larvae (*Aphodius, Rhizotrogus, Anisoplia*). The female burrows into the soil to find a usually mature larval host in its cell. The wasp burrows below the host's cell before breaking into it, where she stings the larva and kneads it with her mandibles. An egg is laid usually on the lateral or ventral surface of the host in a fold of the cuticle. The paralysis is temporary, lasting 20-40 minutes, after which the larva becomes active, usually sufficiently so to continue feeding on grass roots. The larva takes about three weeks to eat its host. Pupation takes place in the host's cell. Probably one generation a year. Nationally: 1 genus with 2 species with 1 species in Lincolnshire.

Tiphia minuta Vander Linden, 1827. Nb, ANS Widespread, Edwards & Telfer, 2001. 1 record. 23 June. RW, 1997, ASL.

Subfamily **Methochinae**

Genus **Methocha**, Latreille, 1804

Medium-size black, solitary wasps with the female having a red thorax, propodeum and part of the antenna. Female wingless. The larvae are parasitoids on larvae of tiger beetles (*Cicindela*). The female runs over the surface of the

ground looking for the burrow of its host. When found, the wasp allows the host's larva to grasp her around her heavily-armoured thorax. As the host comes out of its burrow the wasp bends its gaster down and stings the larva below the head capsule. The larva is quickly immobilised and the wasp then pulls it deep into the burrow where she lays a single egg on the ventral side, usually behind the coxae of the hind legs. The wasp fills the burrow with grains of sand, small twigs and small fibrous pieces of humus before leaving. Probably one generation a year. Nationally: 1 species, also recorded in Lincolnshire.
Methocha articulata Latreille, 1792. Nb, ANS Scarce, Edwards, 1998. 1 record. Woodhall Spa, 1941, MWG.

Family MUTILLIDAE Subfamily **Myrmosinae**
Genus **Myrmosa** Latreille, 1796
Female small and male small to medium-size solitary wasps. The male is black and the female red with a black head and black bands on the gaster.
Female wingless. The larva is probably a parasitoid, rather than a cleptoparasite, on various ground-nesting sphecid wasps and halictid bees. The female runs over the surface of the ground searching for the burrows of its hosts. Nationally: 1 species, also recorded from Lincolnshire.
Myrmosa atra Panzer, 1801. ANS Widespread, Edwards, 1998. 13 records. 17 June-27 Aug. Grantham, 1950, HB; Hameringham, 1936, HPJ; Laughton Common, 1996, AG; MSQ, 1990, 1992, MEA; Raithby, 1941, MWG; RW, 1993, AG; RIW, 1984, 1985, 1987, MEA; Sausthorpe, 1941, MWG; Woodhall Spa, 1941, MWG.

Family SAPYGIDAE
Medium-size to large wasps. Black, often with red, yellow or white markings. The larvae are cleptoparasites on solitary bees of the genera *Osmia* and *Chelostoma*. The female introduces an egg into the cell of its host by using her sting to penetrate the cell wall. On hatching, the first instar larva, although without legs, is active and destroys the host's egg with its large mandibles. The larva then moults into the next instar which has smaller mandibles and feeds on the host's provisions. Probably one generation a year. Nationally: 2 genera with 2 species, with both species recorded from Lincolnshire.
Genus **Monosapyga** Pic, 1920
Monosapyga clavicornis (L., 1758). Nb, ANS Scarce, Edwards, 1998. 2 records. 11 June. OL, 1937, MWG; Torksey, 1901, ES.
Genus **Sapyga** Latreille, 1796
Sapyga quinquepunctata (Fab., 1781). ANS Widespread, Edwards & Telfer, 2001. 2 records. 4 June. KM, 1996, MEA; OB, 1941, MWG.

Family **Vespidae** Subfamily **Vespinae**
The advanced eusocial wasps have an annual life-cycle in the British Isles. Adults feed on material containing carbohydrates such as tree sap, nectar, honeydew and steal honey from colonies of bumble bees. Over-wintering fertilised queens emerge in the spring and build a nest from wood fibres which are macerated and mixed with saliva to form a pulp. The nest sites vary according to the species but may be underground, usually in an abandoned small mammal burrow, or aerial under an overhang, in a hollow tree, in a hedge, or inside a building. The nest consists of combs of hexagonal cells which open downwards, and are surrounded by an envelope. The queen feeds the larvae on macerated insects and spiders. The first brood develop into adult workers. These workers build

further combs and look after the brood hatching from more queen eggs. Later in the season combs of larger cells are built in which the new queens are reared. Males are usually reared in the smaller cells; but sometimes also in the large cells. Males and new queens leave the colonies and, after mating, the queens enter over-wintering sites in sheltered places e.g. under bark and stones, and the males die. The workers gradually all die. One species, *Vespula austriaca,* does not build its own nest but takes over, or usurps, a young colony, usually with just a few workers, of *Vespula rufa*. Such a species is called a social parasite or a cuckoo. The cuckoo queen kills the host queen and uses the workers of the host species to rear a brood of new cuckoo queens and males. The cuckoo species does not produce workers. The queens of non-cuckoo species often attempt to usurp the queen of another colony, usually of the same species but sometimes of a different species. Nationally: 4 genera with 9 species, with 3 genera and 7 species in Lincolnshire.

Genus **Vespa** L., 1758

A large brown and yellow wasp usually known as a hornet. Aerial nests are found in hollow trees, roof spaces and outhouses. Some colonies are started in cavities underground but later re-located to aerial sites. Small colonies with, on average, about 190 workers at maximum size. Colonies usually from April until October. Nationally: 1 species.

Vespa crabro L., 1758. Edwards, 1997. 34 records. 29 April-23 Oct. Belton Park, 2002, KDR; Bourne Wood, 1990, AF; Carlton le Moorland, 2006, JH; Grebby, 1986, 1994, 2001, WGH; Grimsby, 2000, JPF; Grimsthorpe Park, 1995, AG, 1998, AF; Gundy, 1984, 1986, WGH; Gundy Estate, 1984, DKC; Humberstone, 1951, BAH; Hurdletree Bank, 1996, AF; Kettlethorpe, 2000, AB; Kirby Pits, 2001, 2002, KDR; Morkery Wood, 2002, KDR; Potterhanworth Wood, 1992, ASL; Revesby Reservoir, 2002, KDR; Roughton, 2001, KDR; South Carlton, 2003, ABL; St Helen's Wood, 1993, AF; Tattershall Pits, 2002, KDR; Washingborough Pits, 2006, RG; Wasps Nest, 1992, ASL; Welton Wood, 1986, 1992, WGH; Wickenby Wood, 2003, CS; Willingham Wood, 2003, CS; Woodhall Spa, 1994, AG.

Genus **Dolichovespula** Rohwer, 1916

Large black and yellow wasps. Nests normally aerial on branches of trees or shrubs, in bird boxes, under eaves of a house or under overhanging earth banks. Colonies of *D. sylvestris* may be underground in existing cavities at, or near, the surface of the ground. Small colonies with, on average, about 200-300 workers at maximum size. Colonies usually from April to August. Nationally 4 species, with 3 species in Lincolnshire. *Dolichovespula media* and *D. saxonica* are recent arrivals in Britain from Europe, and are still enlarging their ranges.

Dolichovespula media (Retzius, 1783). Edwards, 1997. 7 records. 15 Aug.-16 Oct. Bourne, 1993, DS; GP, 1996, SPMR; Grantham, 1993, DS; Lincoln, 2000, PP; MSQ, 1999, 2001, JD; Roughton Wood, 1993, RSK.

Dolichovespula norwegica (Fab., 1781). Edwards & Telfer, 2002. 2 records. 25 June-7 July. RW, 1990, MEA; STD, 1998, MEA.

Dolichovespula sylvestris (Scopoli, 1763). Edwards & Telfer, 2002. 13 records. 16 July-22 Aug. GP, 1989, MEA, 1994, PFY, 1996, SPMR; KM, 1996, MEA; Kirton-in-Lindsey, 1888, CFG; MT, 1988, MEA; MSQ, 1999, 2000, MEA; OB, 1941, MWG; RIW, 1984, MEA; Scunthorpe, 1901, P; Whisby Nature Park, 1993, PP.

Genus **Vespula** Thomson, 1869

Large black and yellow wasps. *V. rufa* nests usually in shallow underground cavities, often under the leaf litter or tufts of grass. A few nests are aerial e.g. in bird boxes, cavity walls, outhouses. Small colonies with, on average, about 160 workers at maximum size. Colonies usually from April until August. *V. germanica* and *V. vulgaris* nest usually in deep underground cavities which they enlarge. Sometimes nests are aerial in enclosed spaces, e.g. in cavity walls, attics, hollow trees. Large colonies with, on average, about 1600-2000 workers at maximum size. Colonies usually from April until October. Nationally: 4 species with 3 species in Lincolnshire.

Vespula rufa (L., 1758). Edwards & Telfer, 2001. 29 records. 13 April-26 Aug. Blankney Fen, 1994, ASL; GP, 1989, 1995, MEA, 1996, SPMR; Grimsby, 1989, JPF; KM, 1989, 1991, 1995, MEA; Kirton-in-Lindsey, 1888, CFG; Linwood Warren, 1998, PW; MSQ, 1988, 1989, 1992, 1995, 2000, 2001, MEA; Moor Farm NR, 1989, MEA; OB, 1941, MWG; RW, 1993, MEA; RIW, 1985, 1986, MEA; STD, 1984, 1986, 1989, MEA; Scotton Common, 1988, MEA; Snipe Dales NR, 1989, MEA.

Vespula germanica (Fab., 1793). Edwards & Telfer, 2002. 34 records. 1 March-1 Nov. Alkborough, 1980, RSK; Asby, 1899, RTC; Blankney Fen, 1990, ASL; GP, 1991, 1992, 1995, 1996, MEA, 1996, SPMR; Grimsby, 1980, JPF; Ingoldmells, 1899, EAW; Kirton-in-Lindsey, 1888, CFC; MSQ, 1988, 1990, 1992, 1995, 1996, 1999, MEA; OB, 1941, MWG; RW, 1997, 2001, MEA; RIW, 1984, MEA; STD, 1984, 1995, MEA; Scunthorpe, 1901, P; Whisby Nature Park, 1993, 2006, PP; Winterton, 1968, RSK; Woodhall Spa, 1899, WL.

Vespula vulgaris (L., 1758). Edwards & Telfer, 2002. 35 records.24 April-13 Oct. Barton-upon-Humber, 2005, PK; GP, 1982, 1995, DSH, 1989, 1992, 1996, MEA; Grebby, 1990, WGH; Grimsby, 1980, JPF; KM, 1989, 1991, 1994, 1995, MEA; Kirton-in-Lindsey, 1888, CFG; MT, 1988, MEA; MSQ, 1989, 1994, 1996, 1999, 2000, 2001, MEA; OB, 1941, MWG; RW, 1989, 1990, 1991, 1996, 2001, 2002, MEA; Whisby Nature Park, 1994, PP; Woodhall Spa, 1899, WL.

References

ARCHER, M.E. 2002. *The Wasps, Ants and Bees of Watsonian Yorkshire*. Yorkshire Naturalists' Union, York.

ARCHER, M.E. (ed.) 2004. *BWARS. Bees, Wasps and Ants Recording Society Members' Handbook*. Centre for Ecology and Hydrology, Huntingdon.

EDWARDS, R. ed. 1997. Provisional atlas of the aculeate Hymenoptera of Britain and Ireland. Part 1. Huntingdon Biological Records Centre.

EDWARDS, R. ed. 1998. Provisional atlas of the aculeate Hymenoptera of Britain and Ireland. Part 2. Huntingdon Biological Records Centre.

EDWARDS, R. & TELFER, M.G. eds 2001. Provisional atlas of the aculeate Hymenoptera of Britain and Ireland. Part 3. Huntingdon Biological Records Centre.

EDWARDS, R. & TELFER, M.G. eds 2002. Provisional atlas of the aculeate Hymenoptera of Britain and Ireland. Part 4. Huntingdon Biological Records Centre.

EDWARDS, R. & BROAD, G.R. eds 2005. Provisional atlas of the aculeate Hymenoptera of Britain and Ireland. Part 5. Huntingdon Biological Records Centre.

EDWARDS, R. & BROAD, G.R. eds 2006. Provisional atlas of the aculeate Hymenoptera of Britain and Ireland. Part 6. Huntingdon Biological Records Centre.

FALK, S., 1991. A review of the scarce and threatened bees, wasps and ants of Great Britain. *Research and Survey in Nature Conservation* **35**: 1-344.

GAULD, I. & BOLTON, B. eds 2nd ed.1996. *The Hymenoptera*. British Museum (Natural History) & Oxford University Press.

GRAHAM, M.W. 1941. The Hymenoptera, Hemiptera, Neuroptera, Trichoptera, etc. in East Lincolnshire. *Entomologists' Monthly Magazine* **77**: 97-101.

KUNZ, P.X. 1994. Die Goldwespen (Chysididae) Baden-Württembergs. *Beihefte zu den Veröffentlichungen für Naturschutz und Landschaftspflege in Baden-Württemberg* **77**: 1-188.

MORGAN, D. 1984. *Cuckoo Wasps (Hymenoptera, Chrysididae)*. Handbooks for the Identification of British Insects **6** Part 1. London, Royal Entomological Society.

O'NEILL, K.M. 2001. *Solitary Wasps. Behaviour and Natural History*. Cornell University Press.

SHIRT, D.B. (ed.), 1987. *British Red Data Books: 2. Insects*. Nature Conservancy Council, *Peterborough*.

WEAVER, G. 1997. Natural Areas & Lincolnshire. *The Lincolnshire Naturalist* **24**: 95-110.

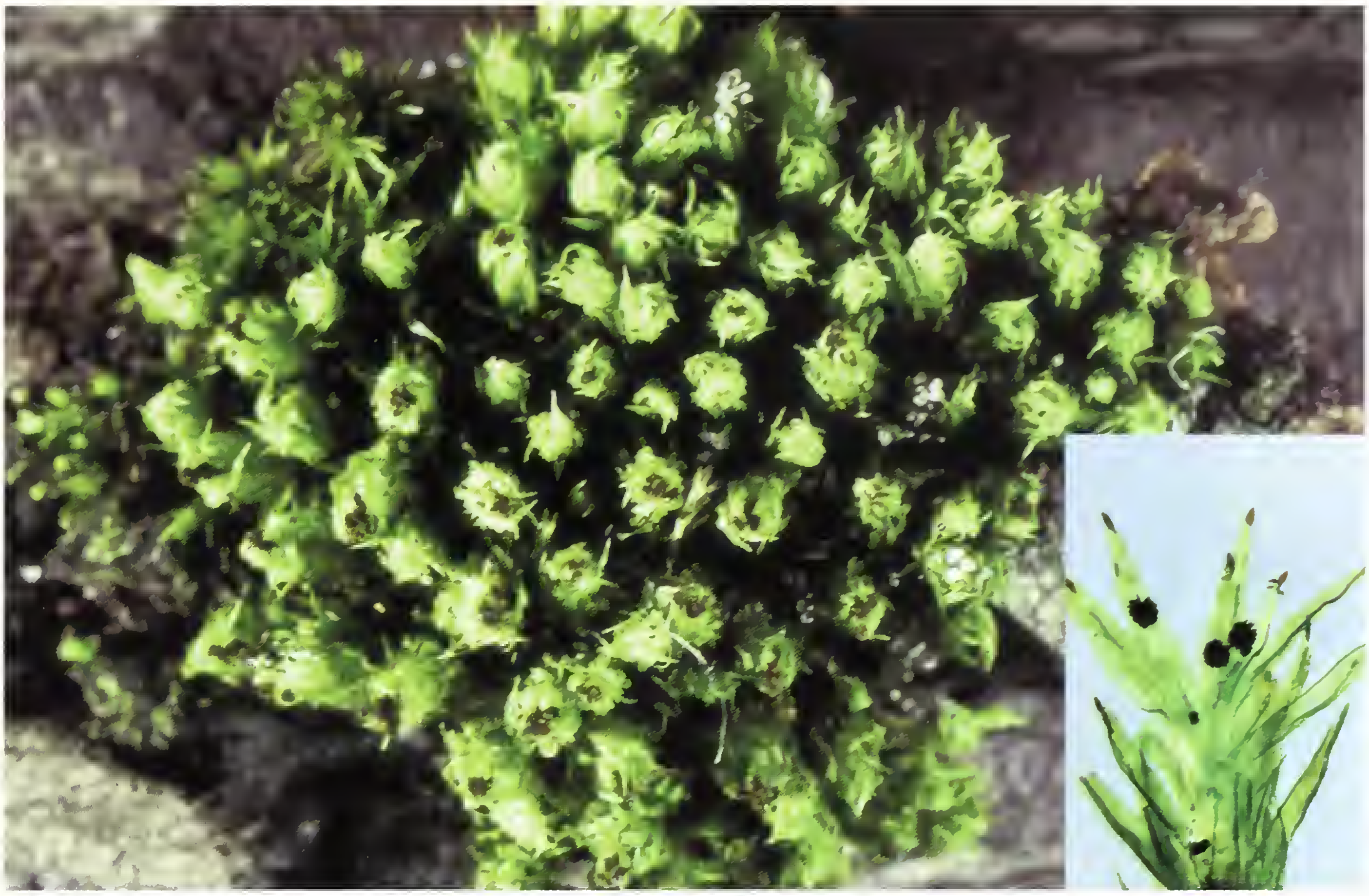


Plate 1. *Ulota phyllantha* with clusters of dark fusiform gemmae, seen dry in habitat and enlarged in wet preparation (page 209). photo Christine Rieser

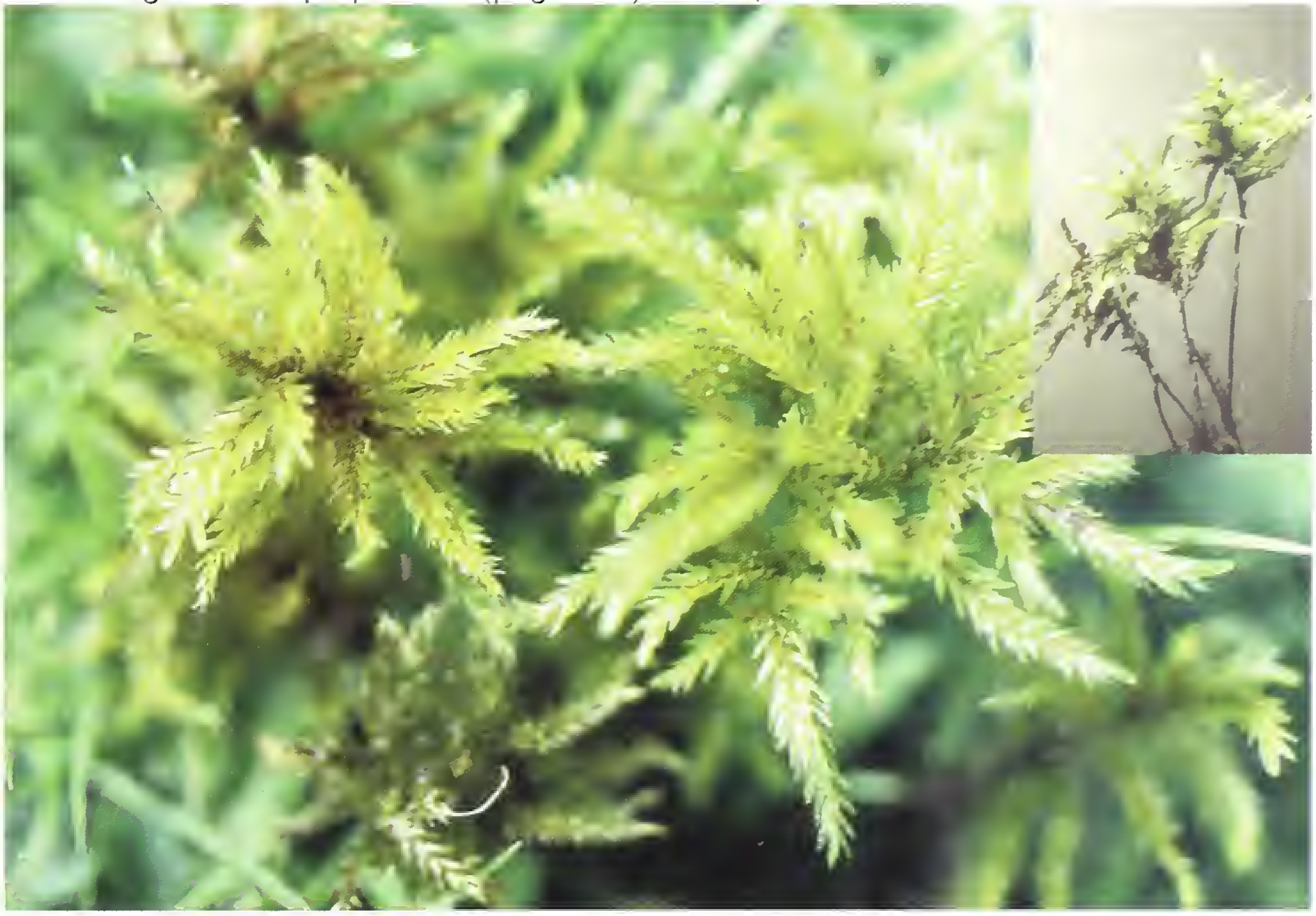


Plate 2. *Climacium dendroides* from damp grassy areas in the scrub behind the coastal dunes, considered to be at risk on the east side of the country (page 209).
photo Christine Rieser

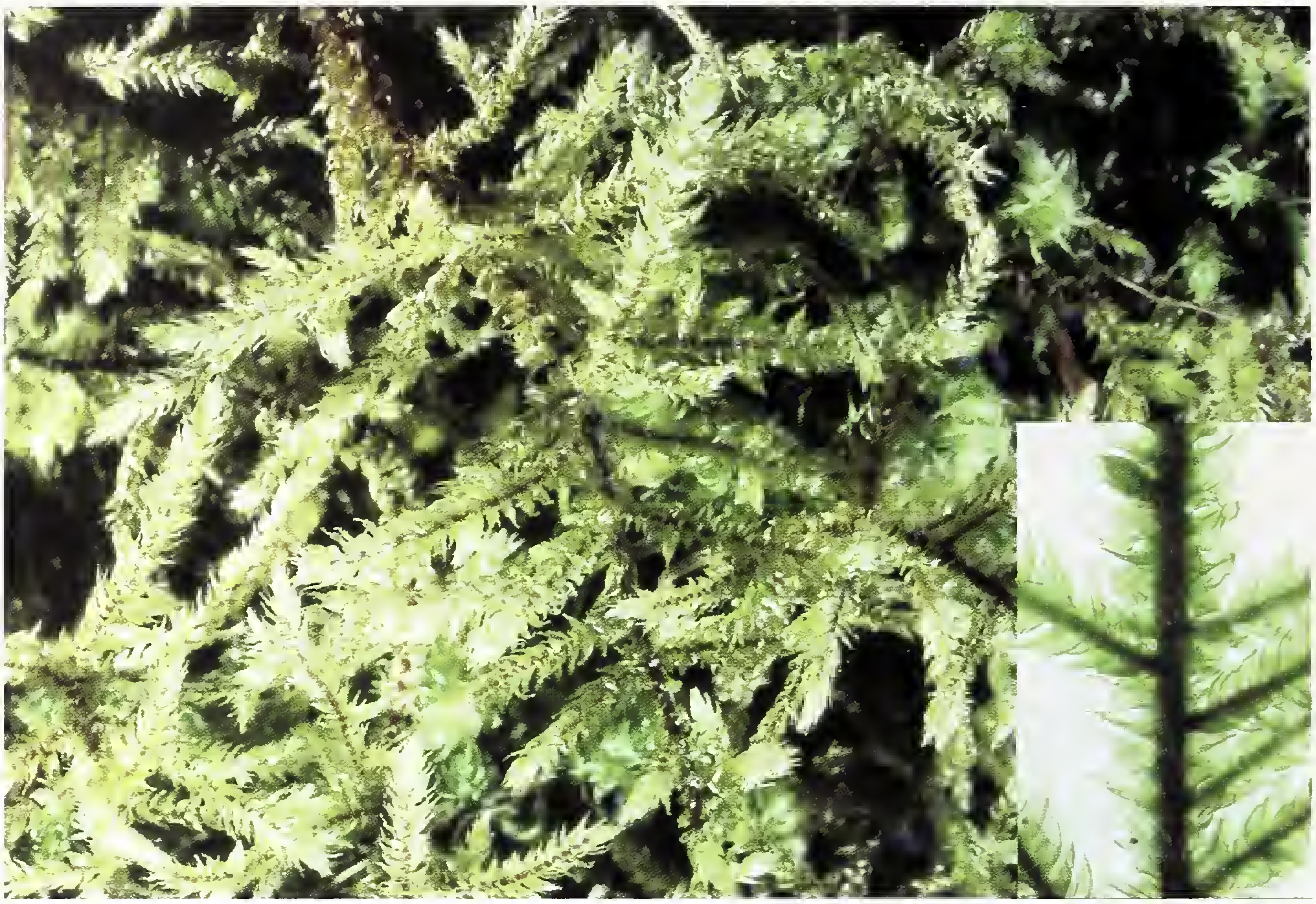


Plate 3. *Hylocomium brevirostre*, on a shaded chalk bank at Binbrook, recorded from only one other site on the east side of the country. Enlarged shows shouldered form of leaf (page 211). photo Christine Reiser

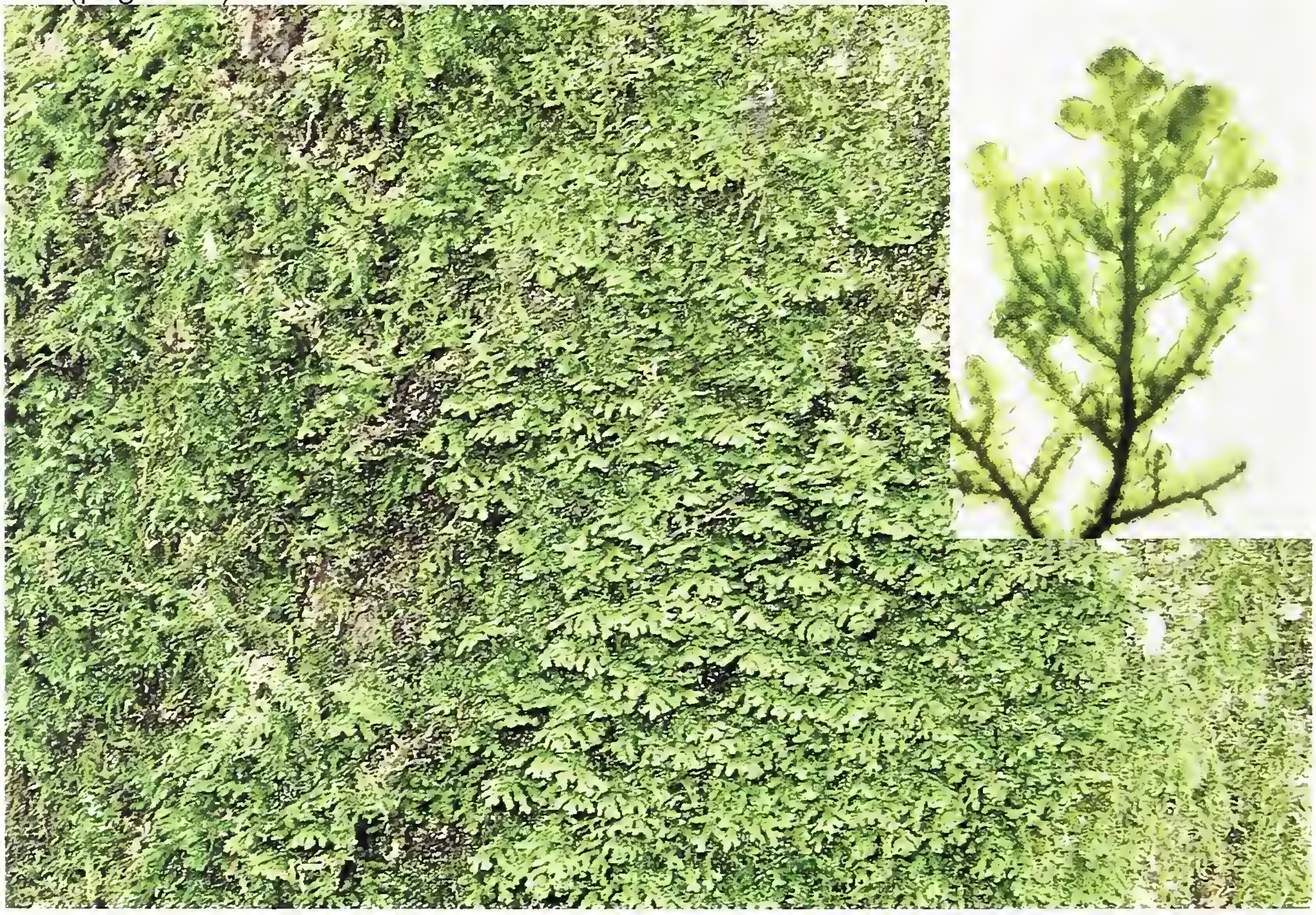


Plate 4. *Porella platyphylla*, a leafy liverwort common on limestone in the south and west of the country but rare in Lincolnshire. Seen on ash trunk and enlarged as a wet preparation (page 211). photo Christine Rieser

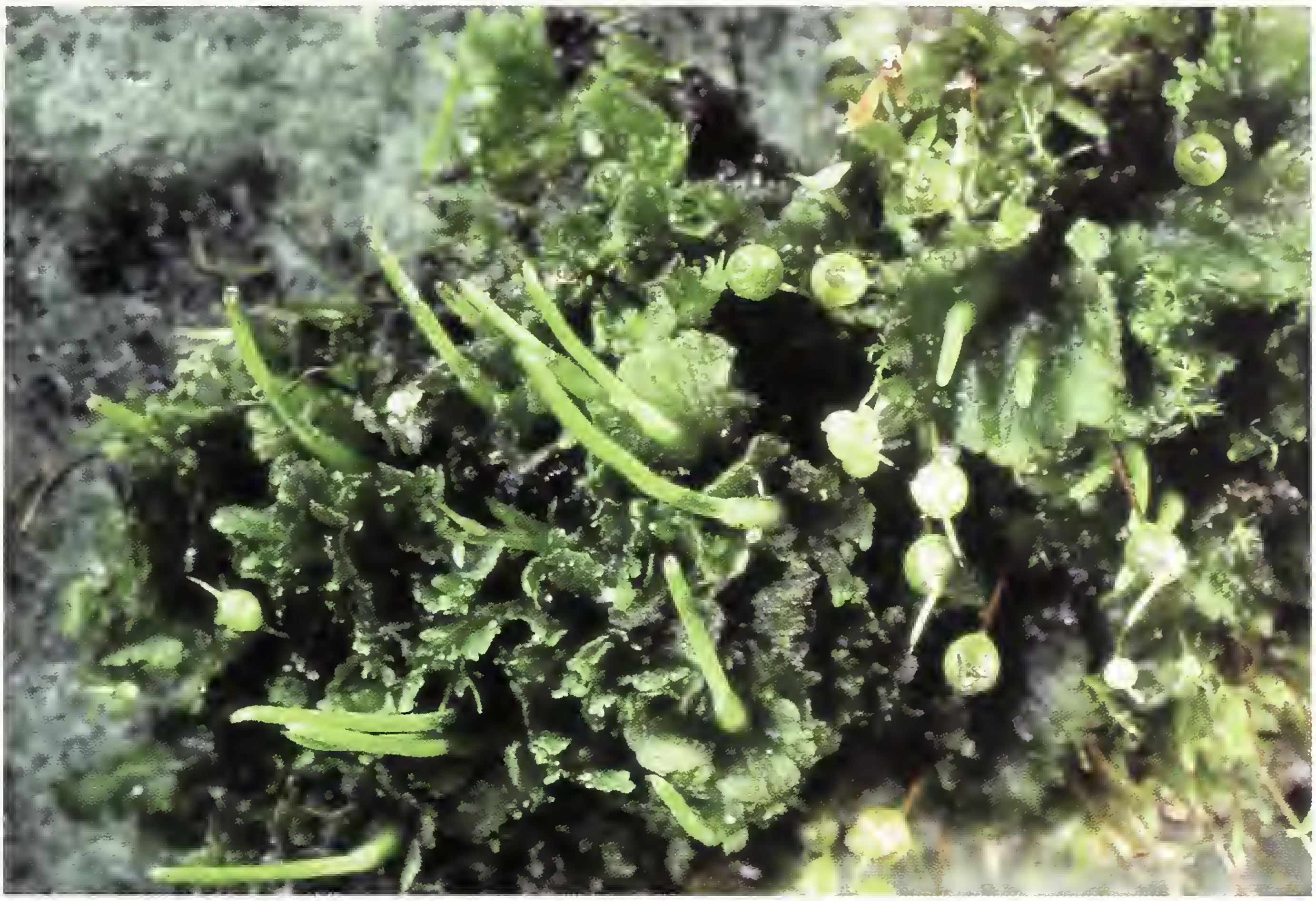


Plate 5. *Anthoceros punctatus*, a hornwort, with stick-like spore capsule, from a stream bank in Silverines Meadow, on Spilsby Sandstone soil, first record for Lincolnshire (page 211) . photo Christine Rieser

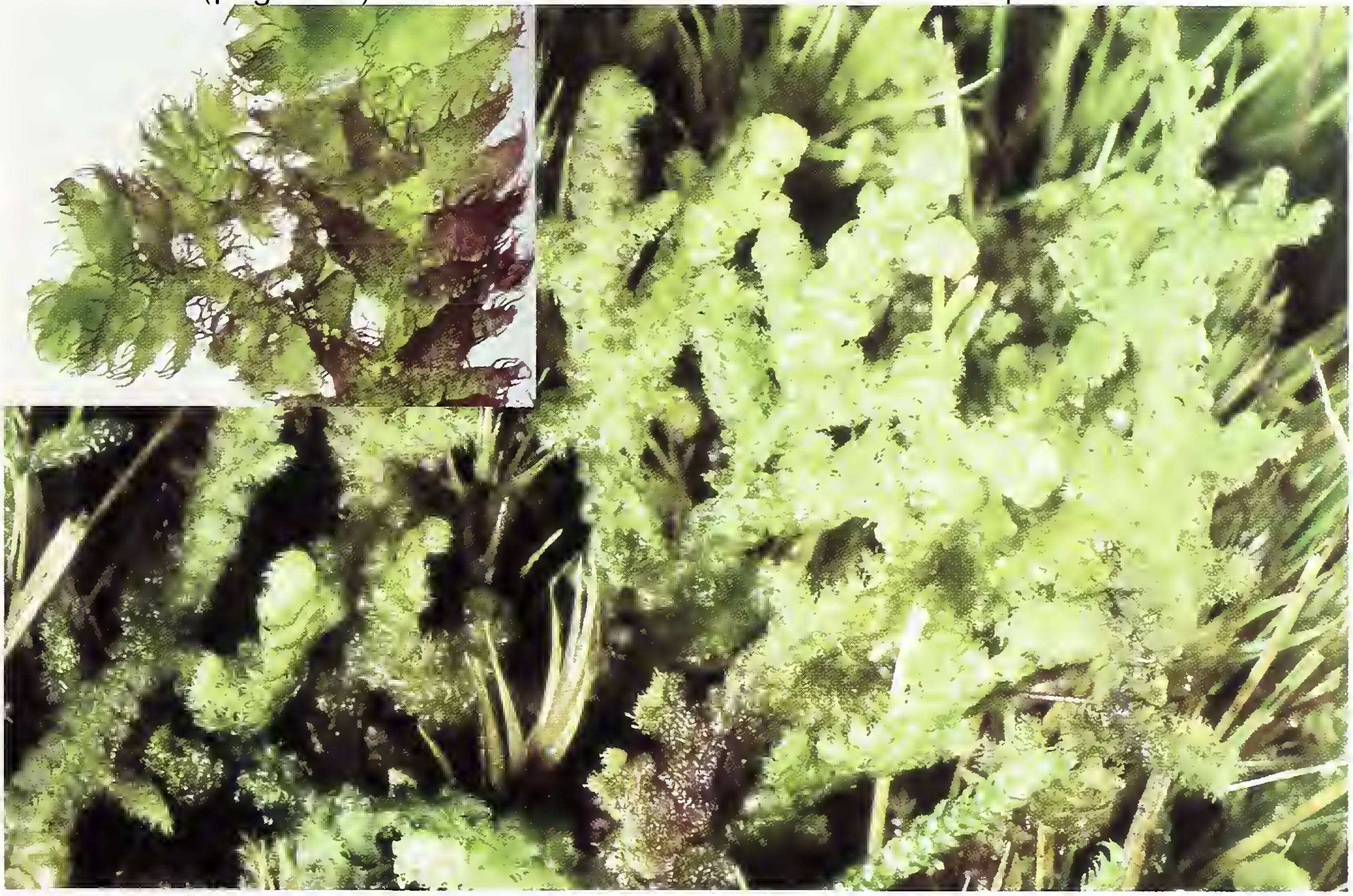


Plate 6. *Ptilidium ciliare*, a leafy liverwort from heathy areas, sometimes under the heather. Enlarged photo shows intricate form of leaves (page 212) photo Christine Rieser

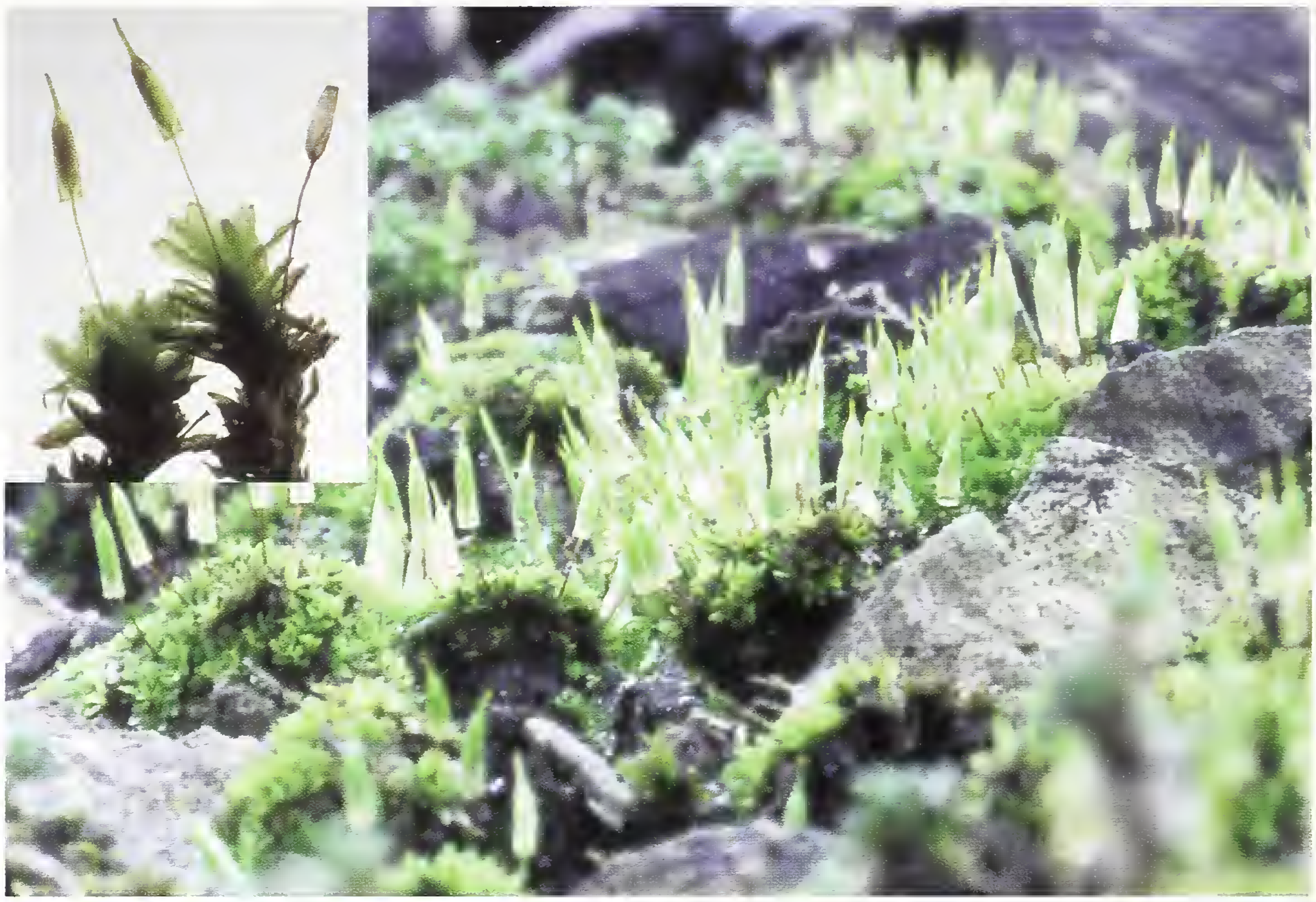


Plate 7. *Encalypta vulgaris*, a limestone moss from Greyingham churchyard. Enlargement shows the long cylindrical calyptra enclosing the capsule (page 213).
photo Christine Rieser

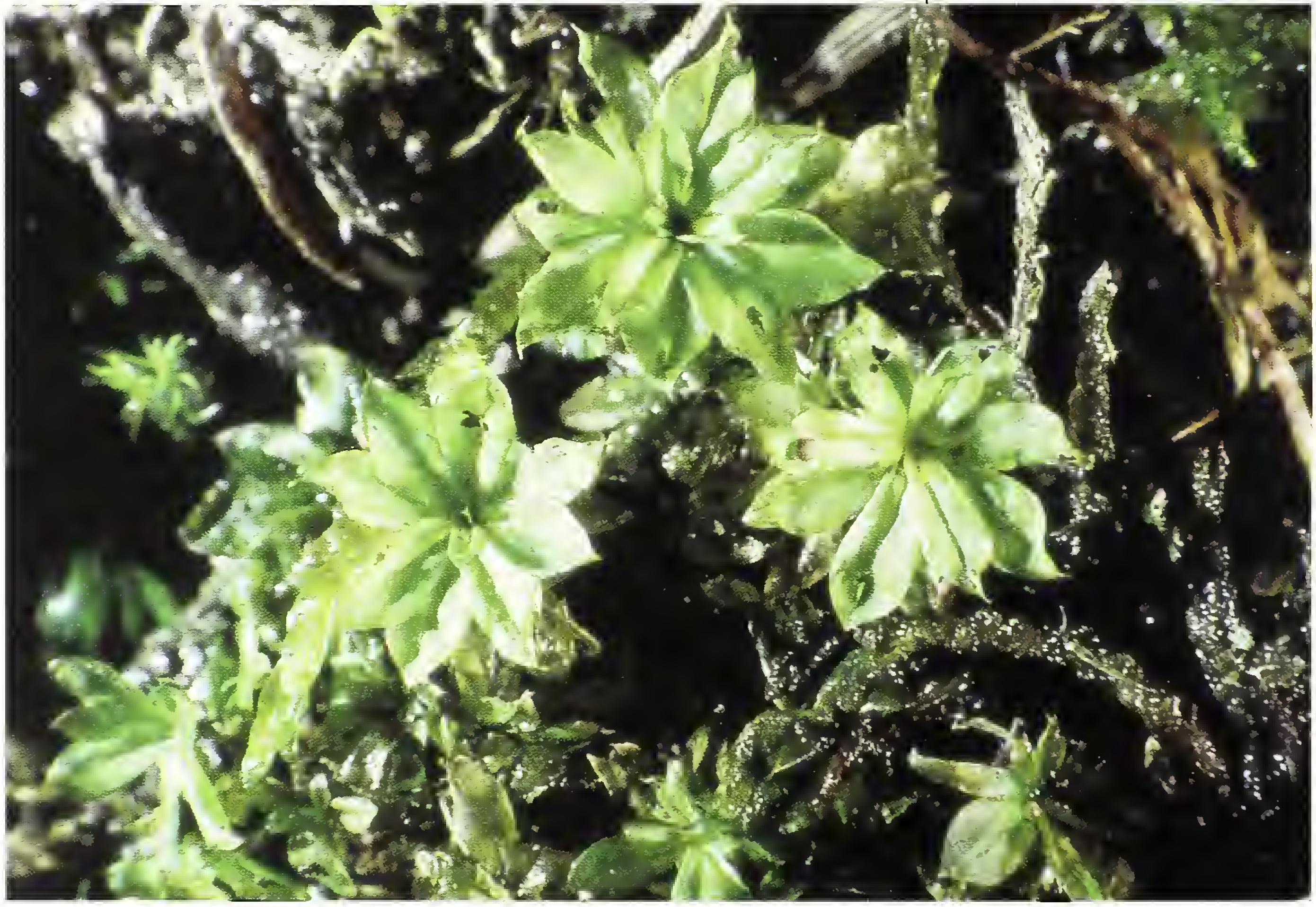


Plate 8. *Rhodobryum roseum*, recorded once from Rowland Plantation in 1989. This moss is listed as scarce in south-east England (page 213). photo Christine Rieser

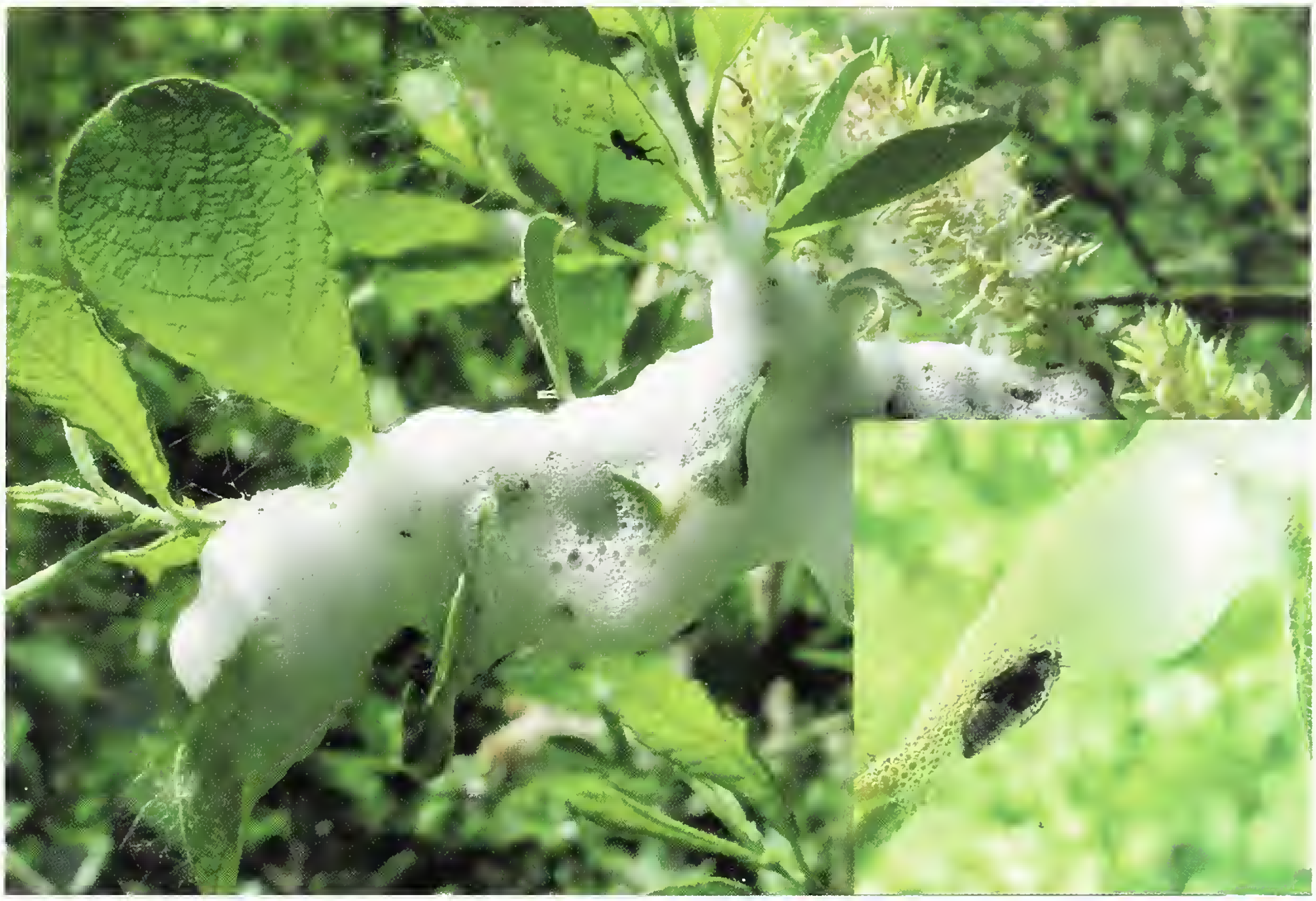


Plate 9. *Aphrophora salicina* (a froghopper) - Whisby Nature Park. Clumps of spittle can contain upto 20 individuals (page 238). photo Allan Binding

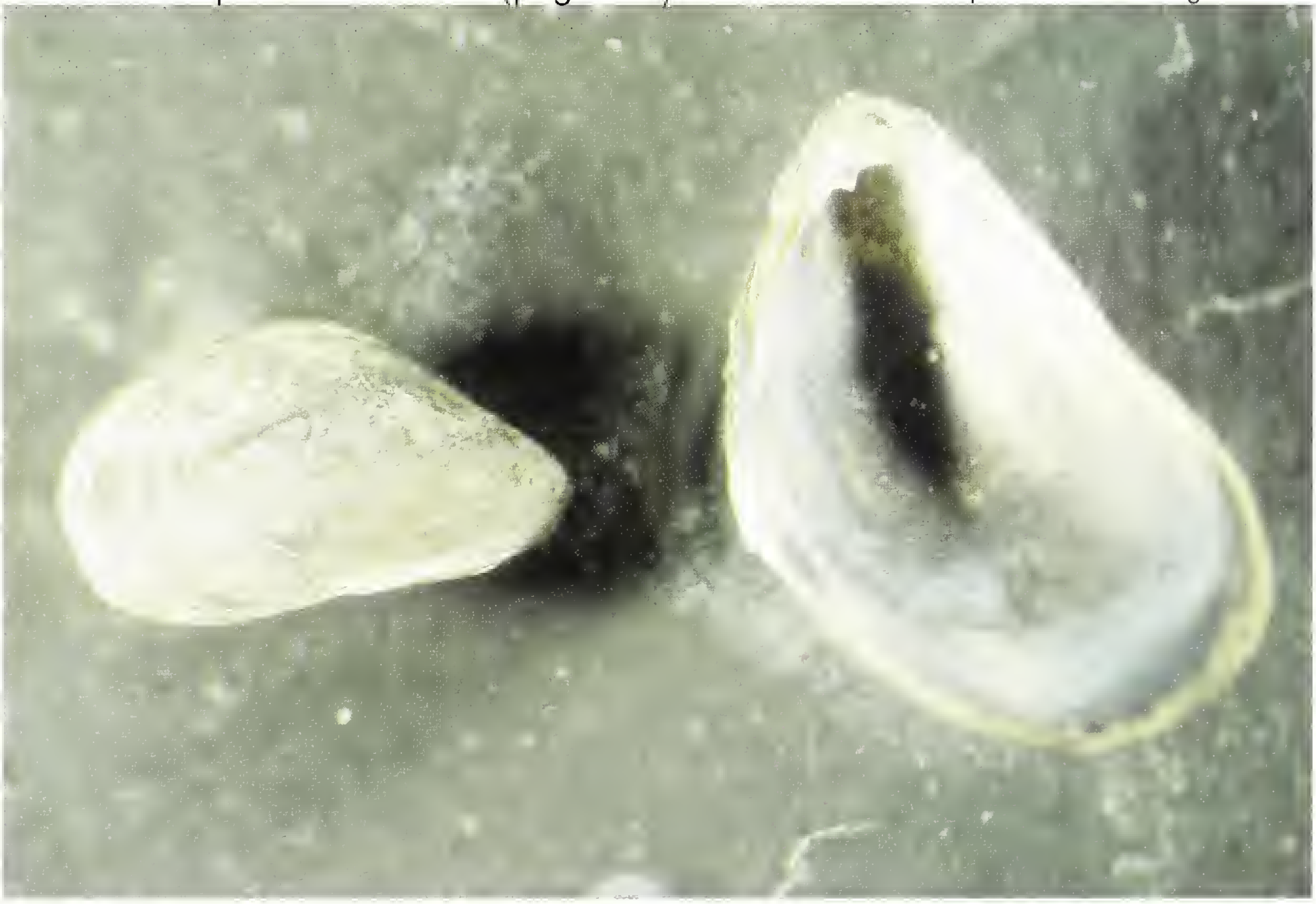


Plate 10. The dark false mussel *Mytilopsis leucophaeta*, a new record for the county. The shells shown are approximately 5mm long (immature); they can grow upto 13mm long (page 242). photo Richard Chadd

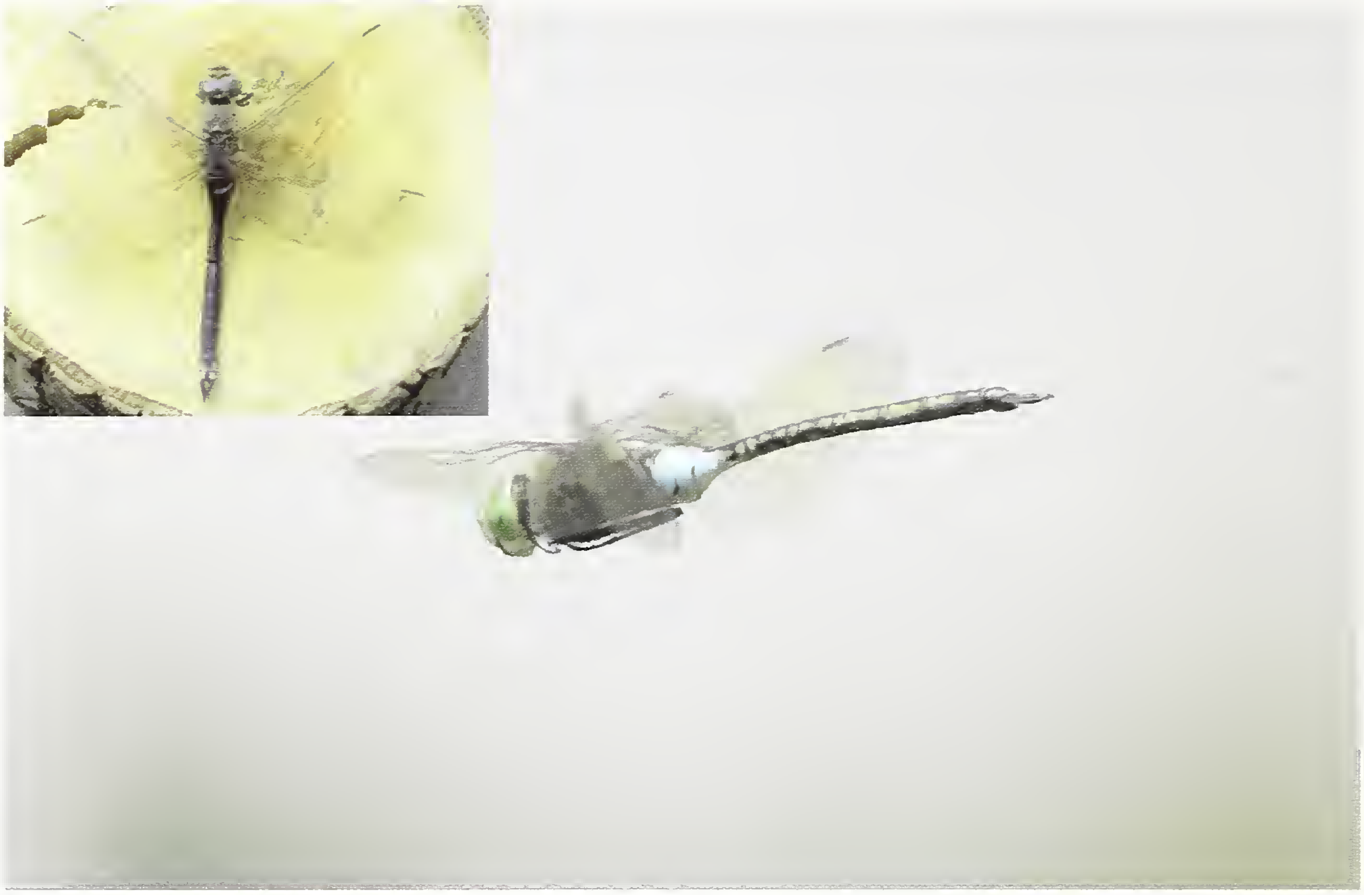


Plate 11. Lesser emperor dragonfly. Recorded ovipositing from Whisby Nature Park in July. Inset is dead, faded female. A first county record (page 244).

photos main picture Graham Catley Nyctea.co.uk/inset Grahame Hopwood

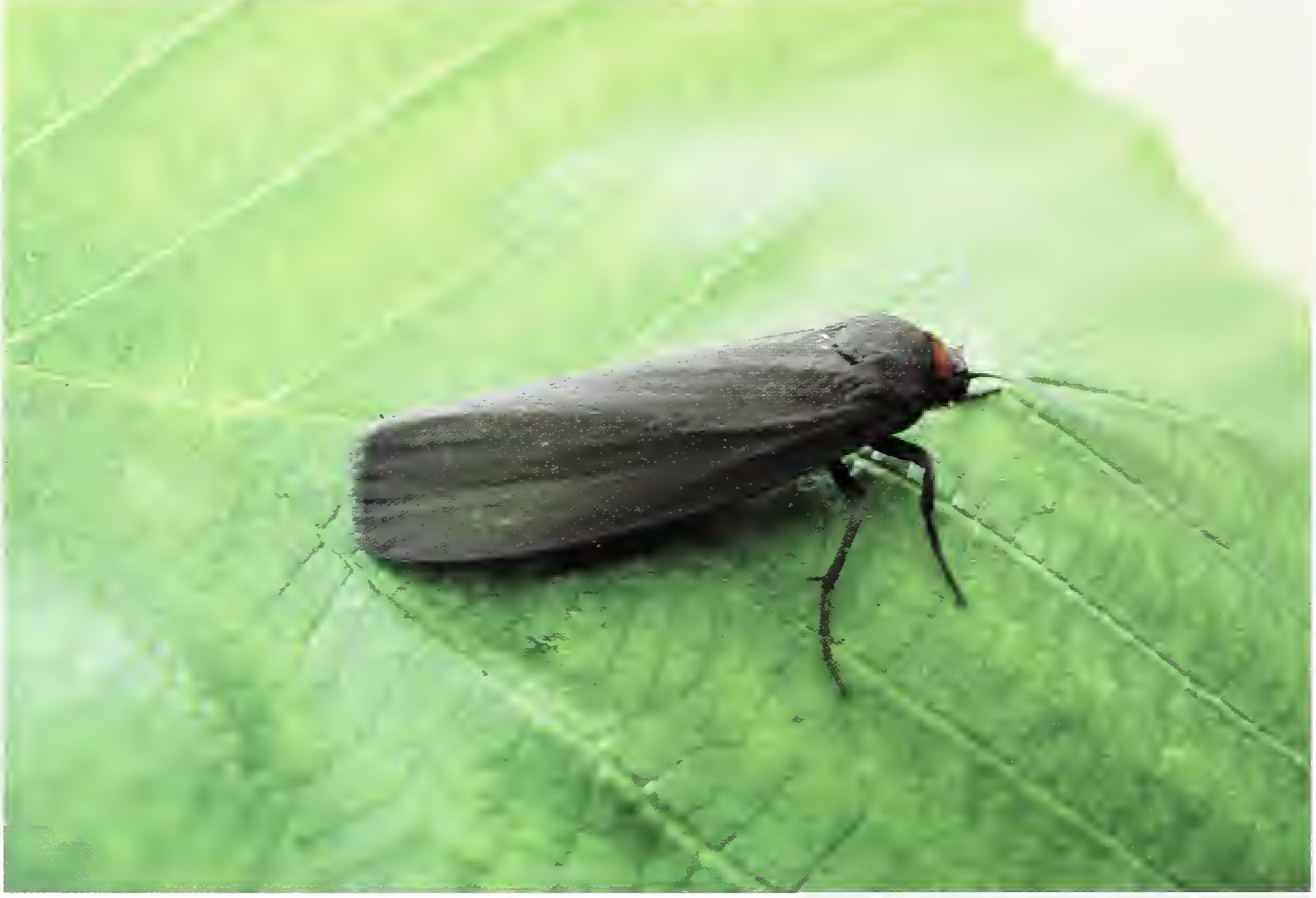


Plate 12. Red-necked footman seen at Gibraltar Point. An early, migrant moth in a remarkable year for moth immigration (page 248). photo Colin Smith

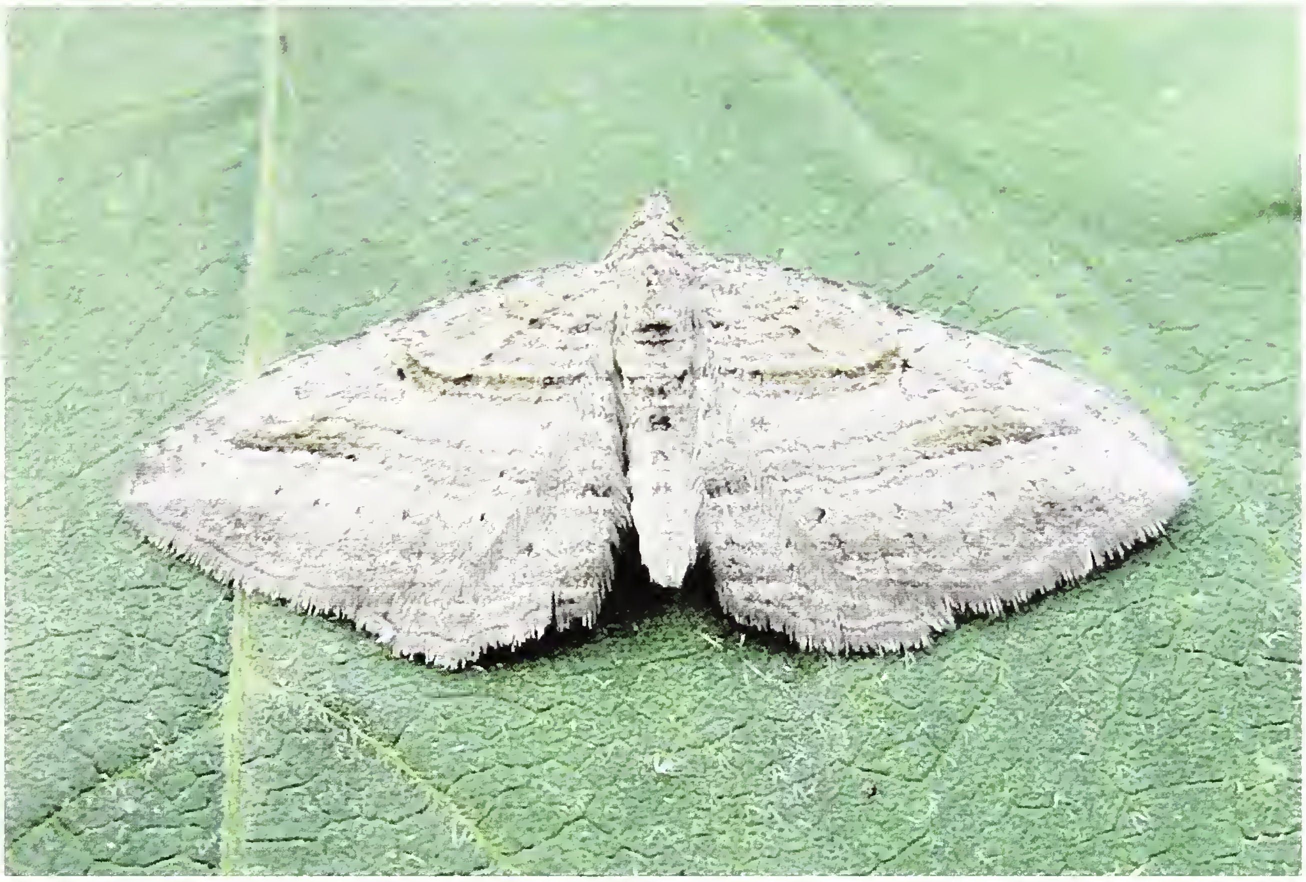


Plate 13. Many lined moth. Found at Muckton. A first for Lincolnshire (page 248).
photo Geoff Wright

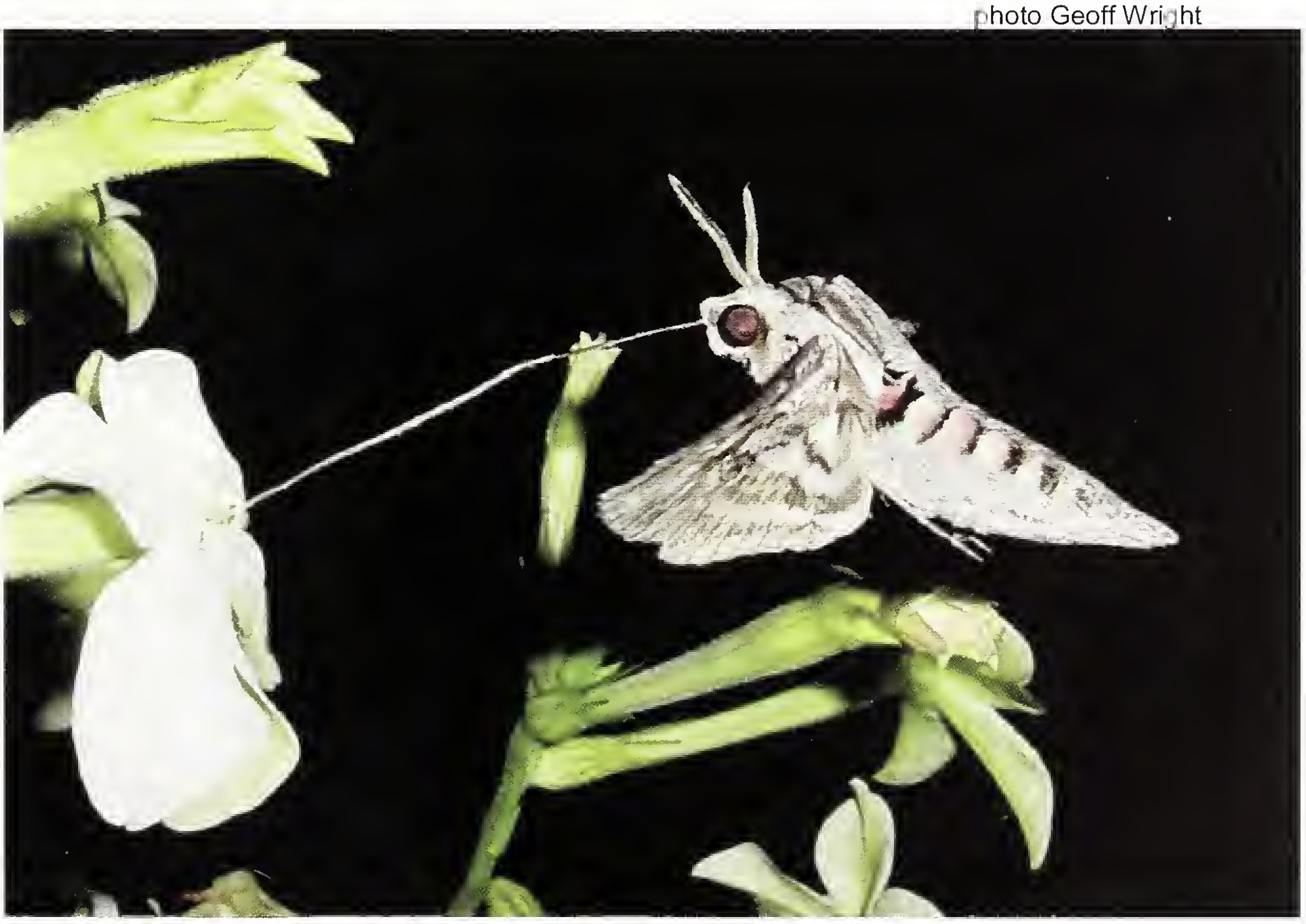


Plate 14. Convolvulus hawk moth, one of more than 30 seen in 2006. Photograph taken in a garden in Louth (page 249). photo Roger Labbett

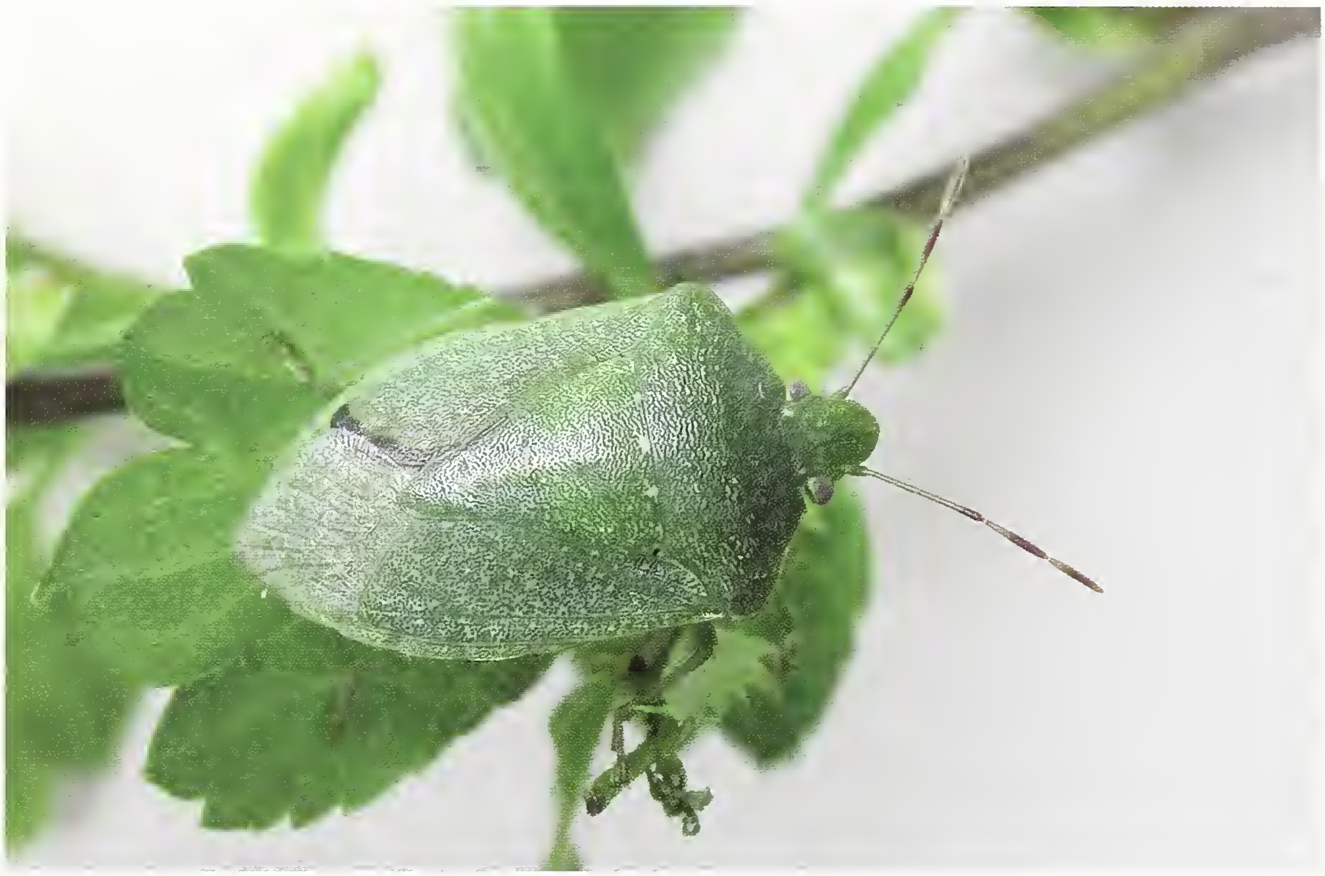


Plate 15. Southern green shieldbug *Nezara viridula*. Common in southern Europe, imported into Lincolnshire on a vehicle from Italy (page 255). photo Allan Binding

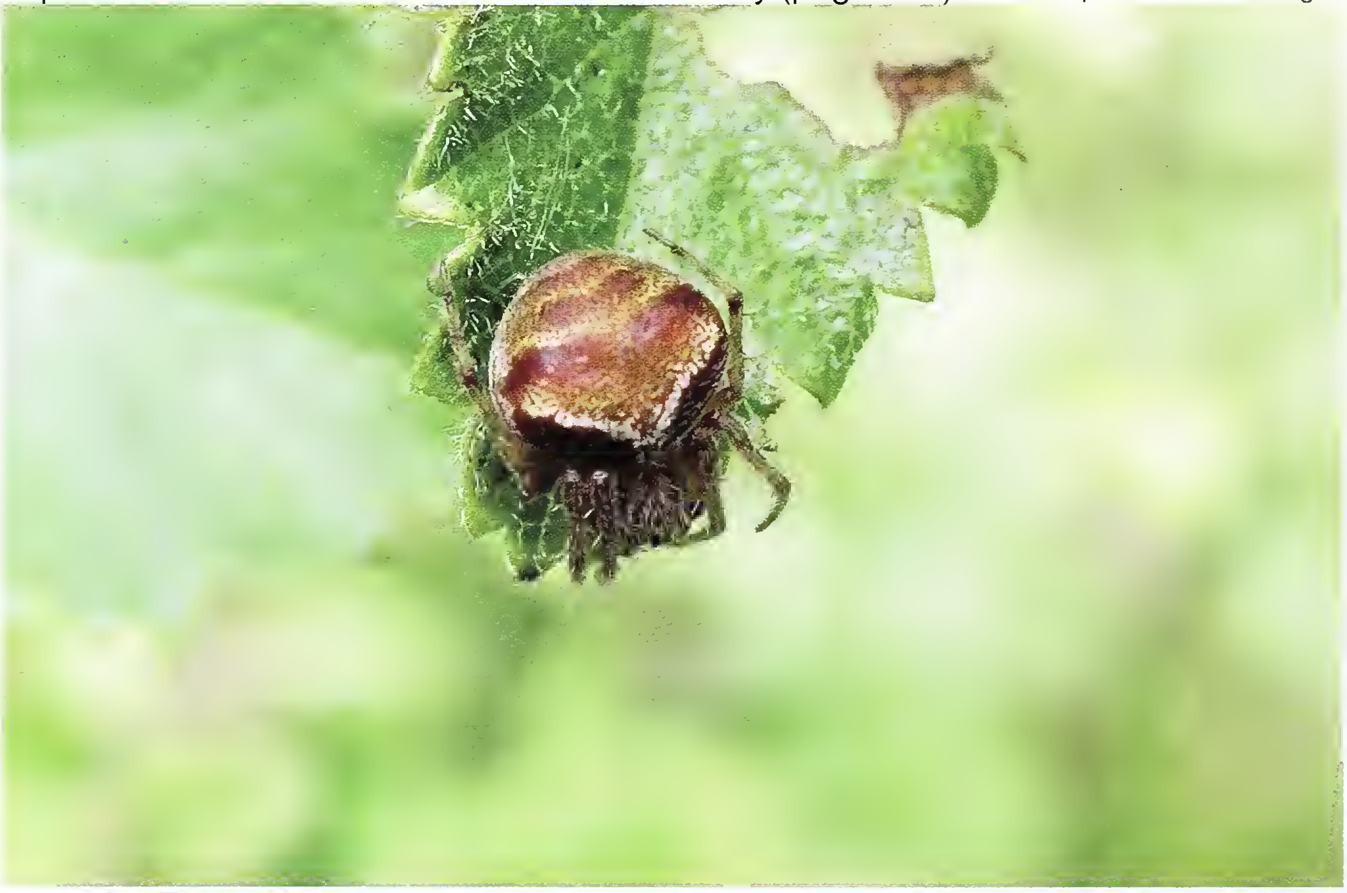


Plate 16. The spider *Araneus triguttatus* was recorded at Whisby Nature Park. The 12th county record, mainly found in southern England (page 256).

photo Allan Binding

Appendix – The grid references and natural areas of sites. The actual location of some sites by some recorders (2, 13, 16, 19, 22, 27, 29, 35, 37, 45, 47, 53, 61) are unknown, so the grid references for these sites can only be approximate.

1. Alkborough. SE8821. North Lincs. Coversands & Clay Vale.
2. Asby. SE8908. North Lincs. Coversands & Clay Vale.
3. Ashing Meadows NR. TF0479. North Lincs. Coversands & Clay Vale.
4. Barton-upon-Humber. TA0322. Humber Estuary.
5. Belton Park. SK9338. Lincs. & Rutland Limestone.
6. Blankney Fen. TF1262. The Fens.
7. Bourne. TF0920. Lincs. & Rutland Limestone.
8. Bourne Wood. TF0721. Lincs. & Rutland Limestone.
9. Carlton le Moorland. SK9057. Trent Valley & Rises.
10. Chambers Plantation. TF1574. North Lincs. Coversands & Clay Vale.
11. Crosby Allotments. SE8912. Lincs. & Rutland Limestone.
12. Gibraltar Point. TF5557. Lincs. Coast & Marshes.
13. Grantham. SK9136. Trent Valley & Rises.
14. Grebby. TF4368. Lincs. Wolds.
15. Grimsby. TA2709. Lincs. Coast & Marshes.
16. Grimsthorpe Park. TF0320. Lincs. & Rutland Limestone.
17. Gundy. SK9121. Lincs. & Rutland Limestone.
18. Gundy Estate. TF4666. Lincs. Coast & Marshes.
19. Hameringham. TF3167. Lincs. Wolds.
20. Humberstone. TA3105. Lincs. Coast & Marshes.
21. Hurdletree Bank. TF3220. The Fens.
22. Ingoldmells.TF5668. Lincs. Coast & Marshes.
23. Kettlethorpe. SK8475. Trent Valley & Rises.
24. Kirkby Moor. TF2262. North Lincs. Coversands & Clay Vale.
25. Kirkby-on-Bain. TF2462. North Lincs. Coversands & Clay Vale.
26. Kirby Pits. TF2361. North Lincs. Coversands & Clay Vale.
27. Kirton-in-Lindsey. SK9398. North Lincs. Coversands & Clay Vale.
28. Laughton Common. SK8599. North Lincs. Coversands & Clay Vale
29. Lincoln. SK9771. Trent Valley & Rises.
30. Linwood Warren. TF1387. North Lincs. Coversands & Clay Vale.
31. Manton & Twigmoor. SE9305. North Lincs. Coversands & Clay Vale.
32. Messingham Sand Quarry. SE9103. North Lincs. Coversands & Clay Vale.
33. Moor Farm NR. TF2263. North Lincs. Coversands & Clay Vale.
34. Morkery Wood. SK9518. Lincs. & Rutland Limestone.
35. Old Bolingbroke. TF3564. North Lincs. Coversands & Clay Vale.
36. Potterhanworth. TF0766. Lincs. & Rutland Limestone.
37. Raithby (Spilsby). TF3767. Lincs. Wolds.
38. Rauceby Warren. TF0343. Lincs. & Rutland Limestone.
39. Redbourne. SK9799. North Lincs. Coversands & Clay Vale.
40. Revesby Reservoir. TF3063. North Lincs. Coversands & Clay Vale.
41. Risby Warren. SE9313. North Lincs. Coversands & Clay Vale.
42. Roughton. TF2464. North Lincs. Coversands & Clay Vale.
43. Roughton Wood. TF2163. North Lincs. Coversands & Clay Vale.
44. Saltfleetby-Theddlethorpe Dunes. TF4791. Lincs. Coast & Marshes.
45. Sausthorpe. TF3869. Lincs. Wolds.
46. Scotton Common. SK8698. North Lincs. Coversands & Clay Vale.
47. Scunthorpe SE8910. North Lincs. Coversands & Clay Vale
48. Snipe Dales. TF3368. Lincs. Wolds.
49. South Carlton. SK9576. North Lincs. Coversands & Clay Vale.
50. St. Helen's Wood. TF2559. North Lincs. Coversands & Clay Vale.
51. Tattershall Pits. TF2056. North Lincs. Coversands & Clay Vale.
52. Tattershall Sand Pits. TF1959. North Lincs. Coversands & Clay Vale.
53. Torksey. SK8378.Trent Vale & Rises.
54. Washingborough. TF0270.The Fens.
55. Wasps Nest. TF0864. The Fens.
56. Welton Wood. TF4670. Lincs. Coast & Marshes.
57. Whisby Nature Park. SK9167. Trent Valley & Rises.
58. Wickenby Wood. TF0782. North Lincs. Coversands & Clay Vale.
59. Willingham Wood. TF1388. North Lincs. Coversands & Clay Vale.
60. Winterton. SE9218. North Lincs. Coversands & Clay Vale.
61. Woodhall Spa. TF1963. North Lincs. Coversands & Clay Vale.

APHROPHORA SALICINA AT WHISBY NATURE PARK

Annette Binding

Allan and I visited Whisby Nature Park on the 8th June, a very hot and sunny day, to look for the hazel pot beetle *Cryptocephalus coryli*. We found none but as we walked back along Magpie Walk we became aware of large drops of moisture dripping down through the trees. At first we thought it must be rain but when we looked up expecting to see a cloud we saw instead huge clumps of froghopper spittle hanging in the sallows. We later identified this spittle as that of *Aphrophora salicina* (Plate 9).

Aphrophora salicina nymphs live in communal groups of up to twenty individuals whereas the closely related *Aphrophora alni* and the common froghopper *Philaenus spumarius* live singly.

Aphrophora salicina make the same kind of froth as the other two species but in much greater quantities because they live in groups.

The adult *Aphrophora salicina* is about twice the size of the common froghopper. The species has a mainly southern distribution but there are records from as far north as Yorkshire. There are records from the Thorne Moors area from 1983 and 1990 (NBN Gateway). It is possible that the Whisby record is the first for Lincolnshire.

LINCOLNSHIRE ENVIRONMENTAL RECORDS CENTRE: DEVELOPMENT AND THE FUTURE

Margaret Haggerty

‘A Local Records Centre is a not-for-profit service run in partnership for the public benefit, which collects, collates, manages and disseminates information of known quality relating to the wildlife, wildlife sites and habitats for a defined geographical area.’

The above quotation is the accepted definition for a local records centre. Lincolnshire Environmental Records (LERC) is now in the third year of development, and became a fully functioning local records centre on 1st April 2007.

Although the official development phase is only in the third year, the idea of having a records centre for Lincolnshire has been in the pipeline for many years. Historically, the LNU has concentrated on recording species, and collating records based on species groups. Lincolnshire Wildlife Trust has concentrated on site-based information. However, much of this information has not been accessible (because of being held on paper only), or generally available (separate databases held by recorders). LERC integrates both of these large resources of information, along with additional information from many other different sources, to create a database that is both accessible and available.

Therefore, information about the distribution of a particular species, or what might have been recorded on a site, can now be drawn from a variety of sources, in a way which would not previously have been possible.

From the beginning, LERC has been promoted as a Lincolnshire Biodiversity Action Plan Partnership project. This was to ensure that the project was independent of any one organisation, and to ensure that all interested parties were represented. Funding for the development phase came from English Nature, Lincolnshire County Council and Lincolnshire Wildlife Trust, as well as the LNU. The belief in the importance of this project was reflected in the level of funding offered, with LNU contributing 20% of its capital over three years. From 2007/08 onwards, the core costs of LERC will be covered via Service Level Agreements with funding partners, as part of the Biodiversity Services offered by Lincolnshire Biodiversity Partnership. The funding partners will include those mentioned above, plus other Local Authorities and Public Bodies, who all have a statutory obligation to have regard for biodiversity in their activities. After such a large initial contribution, the LNU will not be contributing further financially, although it will retain the right to sit on the Biodiversity Partnership Steering Group.

The LNU will continue to be an essential element in the success of LERC. Without the records provided by recorders, and the expertise in record verification, the resulting database would not be sound or meaningful. In order to achieve this, recorders will have full access to information collated by LERC. We currently have Data Exchange Agreements with over half of the LNU Recorders, allowing for open exchange of information.

We also intend to support to the work of recorders and the LNU in other ways. Although LERC is non-profit making, we do charge a fee for commercial data requests. This covers the time taken to extract data, plus a contribution to the data management. The income from these data requests is not regarded as core funding, and will be made available to support specific projects, such as production of atlases, computer software, digitisation of records, or purchase of equipment. LERC is also happy to manage species records on behalf of recorders if they do not wish to maintain a separate database.

LNU Recorders will maintain their link with National Schemes and Societies, and in the future it is hoped that records will be made available via the National Biodiversity Network Gateway, either via national bodies or by LERC. We are working with other records centres to be able to provide information at a regional level, which will include data previously only available at a national level. This will be filtered down to the local level through a website. Therefore, in the future, we will be able to interrogate records collated outside the county, together with those collated locally by different recorders and from different sources.

It has been a major achievement to get Lincolnshire Environmental Records Centre developed to the level at which it is currently functioning. This would not have been possible without the support of the LNU, and this support will continue to be an essential factor in the success of LERC in the years to come.

LINCOLNSHIRE NATURAL HISTORY IN 2006

BATS

Annette Faulkner

Hibernation sites

We now have 10 sites being monitored annually, most now also entered into the National Bat Monitoring Programme counts. In 2005 Garry Steele finally managed to get permission to resurvey at hibernation site at Stourton, a site discovered by Pat Delap in the 1980s, and 3 species were discovered there – an increase on the original survey.

Numbers were fairly stable at most sites compared with previous years, except for a huge influx (150%+ increase), mainly of Natterer's *Myotis nattereri* and Daubenton's *M. daubentonii* into Withcall Tunnel, and to a lesser extent South Willingham in February. This was replicated to some extent also at sites in Suffolk and Essex. No-one has yet come up with a satisfactory explanation, but it has been suggested that these bats might have migrated from the continent associated with prolonged cold weather, rather than the more prosaic explanation of the loss of another unknown hibernation site. The influx didn't extend to the south of the county.

Grounded bats

At 60–70 telephone calls to Bat Group members, the number of calls from the public about grounded bats was down on the last two years, which have hovered round the 90–100 mark. The nicest one was Pickle, a soprano pipistrelle *Pipistrellus pygmaeus* who managed to wrap himself round a clump of burdock heads, was left for dead by the finder, but then was noticed to be still breathing. After 6 weeks in care he was released fit and well, back where he was found.

The most significant call was a grounded Leisler's bat *Nyctalus leisleri* at Boston which had no claw on one thumb, and only half of one on the other. She had been found shut in a garage, but once fed up and flying again it was clear she had adapted to her disability and found ways to cope. She was released back in Boston after a fortnight and headed, not inland as we anticipated, but out towards the east!

Species recording

Members of the Bat Group helped out at a Bat Conservation Trust training session at Kirkby Moor, when Leisler's – a second county record - and a possible barbastelle *Barbastella barbastellus* were recorded.

At the beginning of August a training weekend was organised at Grimsthorpe Park, near Bourne. It turned out to be one of the highlights of the year, with seven species recorded, including Leisler's (again!) and a considerable number of barbastelles, particularly in one area. A further visit at the beginning of

September confirmed their presence in this area, and it is hoped it will be possible to do more survey work in 2007.

ACULEATE HYMENOPTERA

Michael Archer

Thanks to the following six persons who have supplied specimens or records: Annette Faulkner, Roger Goy, Jeremy Hutchinson, G. Marsden, Phil Porter and Stephen Sawden.

A specimen of the rare species, *Melecta albifrons* (Forster) from Donington was submitted by Annette Faulkner. This is the third record for Lincolnshire. Records of hornets, *Vespa crabro* L., were submitted Roger Goy from Washingborough and Jeremy Hutchinson from Carlton-le-Moorland. The hornet can no longer be considered a rare species in Lincolnshire. Specimens for identification were received from G. Marsden (*Nomada leucophthalma* (Kirby) from Whisby Nature Park, 7th record for Lincolnshire) and Stephen Sawden (*Andrena semilaevis* Pérez from Westwoodside, 5th record for Lincolnshire). These two latter records of nationally common and widespread species indicate that the recording of aculeate Hymenoptera in Lincolnshire is still at an early stage. Phil Porter (from Whisby Nature Park) and Stephen Sawden (from Westwoodside) send specimens for identification which proved to be *Nomada flava* Panzer (6th and 7th records for Lincolnshire). This is a relatively new species for Lincolnshire (1st record during 1994) and indicates an increase of its range northwards with subsequent increase in abundance.

BUTTERFLIES

Allan Binding

The spring of 2006 was very cold and wet. Many early species of butterfly including dingy and grizzled skipper were down in numbers. This was followed by one of the hottest summers on record. It was not surprising that many of the butterflies seen in the summertime had a good year.

There was a strong migration of butterflies from Europe, resulting in many clouded yellows, painted ladies and red admirals being seen throughout the county. By August, Camberwell beauty had been reported from Norfolk and Suffolk and it was not long after that that one was spotted at Gibraltar Point. This was the first documented record in the county since 2002. Eleven more sightings of this butterfly species were reported in the county over a very wide area.

One single long-tailed blue was seen and photographed by Mitchell Pierce near Silk Willoughby on the 12th July. It is not known if this was a migrant or the result of the import of fresh produce from Africa where the butterfly is a pest species.

The last report of this species in Lincolnshire was in year 2000 when Roger Parsons found one flying around his garden.

White admiral had a second brood in the autumn. Toby Ludlow recorded one at Chambers Farm Wood and Phil Porter reported seeing one in his garden on the 13th and 14th October.

Red admirals have been seen in recent years throughout the winter period and 2006 was no exception with them being seen most months until December. I also received a few late autumn records of clouded yellow and painted lady.

More butterfly species (Scotch argus, chalk hill blue, *Fritillary* species and dingy skipper) were again released in the county in 2006 mainly on LWT Reserves without permission. I was informed that this had been done by two or three known naturalists.

Many thanks to all the LNU members who sent in their butterfly records in 2006. Over 8750 records have been received so far.

CONCHOLOGY - NON-MARINE MOLLUSCS

E.J. Redshaw

The most important find in 2006 was of the bivalve dark false mussel *Mytilopsis leucophaeta* (Conrad) which is a new record for the county (Plate 10). On 15th November Martin Gammell of the Environment Agency (EA) visited the South Forty Foot Drain at Swineshead Bridge (TF218429) to carry out invertebrate sampling. Whilst sorting through the collected material in the laboratory he found a number of small mussels with a brown periostracum. The mussels lacked the distinctive dark bands found in the zebra mussel *Dreissena polymorpha*. Internal examination of the shell revealed a triangular tooth on the septum, indicative of *M. leucophaeta*. The identity of the specimens was confirmed by reference to Killeen *et al.,* 2004. Altogether, Gammell found seven specimens in the collected sample. Subsequently on the 30th November, Dr Chris Extence, also of the EA, found one specimen in the South Holland Main Drain at Clifton's Bridge, Sutton St. James (TF380189). At both sites the watercourses contained the crustacean *Gammarus tigrinus* indicating signs of saline ingress.

Prior to these discoveries *M. leucophaeta* was known only from two other sites in Britain, these being Roath Dock in Cardiff in 1996, and from Cliffe Fort Lagoon in Kent in 1998 (Killeen et al. 2004).

Although this is an American species it has been distributed in Europe from Normandy to Denmark for over 160 years, and may become well distributed throughout southern Britain in the upper reaches of tidal systems and brackish lagoons where salinity levels are low (Oliver *et al.*, 1998).

Useful specimens and records have been received from Colin Smith which add to our knowledge of the distribution of species within the county. Full lists of species found following visits in June, by members of the Conchological Society, to Whisby Nature Park (SK9066 and SK9166) and Greetwell Hollow (TF0272) have been reported by Chris du Feu in *Mollusc World*, and include many species new to both sites and to the respective 10km squares. Also, digital images have been received from Roger Labbett, of species from Kenwick Park and other locations which required identification. I am grateful to Chris du Feu for his help with the slug identifications.

References:

Du Feu C., 2006. Field Visit to Greetwell Hollow and Whisby Nature Park, Lincoln, June 24th 2006. *Mollusc World* 12, 4-5.
Gammell M, in press. Two new records for *Mytilopsis leucophyta* in Britain.
Killeen I., Aldridge D. & Oliver G. 2004. *Freshwater Bivalves of Britain and Ireland.* AIDGAP Series, Field Studies Council.
Oliver P G, Holmes A M, & Mettam C. 1998. *Mytilopsis leucophyta* (Conrad, 1831) [Bivalvia: Dressenoidea]. A species new to the British Fauna. *Journal of Conchology* 36, 13-18.

DRAGONFLIES AND DAMSELFLIES

Ian Cappitt

Firstly, I would like to thank all those who have supplied me with records for 2006. This update is based purely on information supplied by other dragonfly recorders and their enthusiasm, motivation and dedication are commendable; we are lucky in Lincolnshire to have so many active recorders. If it wasn't for them, I would have very little content for this newsletter (or the county recorder database) as for me, 2006 (and 2005) provided little opportunity to get out and about.

I would particularly like to thank Grahame Hopwood (Assistant Warden at Whisby Nature Reserve) who has provided many invaluable snippets of information on the Dragonfly News webpage (part of the Lincolnshire Bird Club website) based on his detailed knowledge of dragonflies in Lincolnshire, of which I have incorporated within this update where appropriate.

Taking on the role of dragonfly recorder for Lincolnshire (VC 53 and 54) in March 2005 from Richard Chadd was a daunting task and set me on a steep learning curve, particularly when three box files and a pile of other papers landed on my doorstep! For me, 2006 was a year of collating new data, reviewing and digitising historical data and working on the design of a dragonfly website for Lincolnshire – this website is still 'in-progress' and I hope to have it up and running for spring 2008.

More importantly what about the dragonflies? Within the following text I have tried to present the most interesting highlights of 2006. I apologise in advance if I have missed anything of importance. This is possible as at the time of writing, it is likely that I have not received all records for last year.

General emergence trend

There appears to have been a general trend in Lincolnshire in 2006 with a number of species emerging earlier than previous years including black-tailed skimmer, brown hawker, ruddy darter, emerald damselfly and migrant hawker. However, it should be noted that this observation is based on a limited number of records. The prevailing weather conditions throughout the summer period are most likely to be the influencing factor here.

Variable damselfly *Coenagrion pulchellum*

The first records for Odonata in 2006 came from Boultham Mere on 5 May where variable damselfly *Coenagrion pulchellum* were spotted within the reserve. This species is considered to be a local speciality and the population here and within the adjacent drain are thought to be one of the most important in the county. Grahame Hopwood notes that large number of variables can be found along the drain that runs close to the reserve and so for anyone interested, this is one location with a very good chance of seeing this species.

Hairy dragonfly *Brachytron pratense*

Lincolnshire has had what appears to be a good year for this species. The hairy dragonfly *Brachytron pratense* is considered to be scarce within the county and it is exciting news that a number of individuals have been recorded from new locations around the county including the Warping Drain (P. Lee) and Deeping Lakes Nature Reserve (D. Mainwaring). G. Hopwood also recorded this species from Whisby Nature Reserve, and although previous records exist, it has not been noted from this location since 1986. Good numbers at known locations were also observed including Messingham Sand Quarry and Saltfleetby - Theddlethorpe NNR throughout May and June.

Lesser emperor *Anax parthenope*

The lesser emperor *Anax parthenope* is a brand new species for Lincolnshire with three individuals being recorded at Whisby Nature Reserve in July (Plate 11). Grahame Hopwood was privileged to have obtained the first two records; a pair in tandem at Willow Lake on 1 July with the female repeatedly ovipositing. Grahame noted that 'The following day the female was not seen again, but the male continued to patrol his beat along the western side of Willow Lake until 21 July. During this time he was well twitched by many interested people not just from Lincolnshire but from bordering counties as well'. A. Royston and A. Brownlow were responsible for the third record (a freshly dead individual) at the Education Centre on the 3 July. All three records have been written up by Grahame and sent to the Odonata Records Committee for ratification.

David Mainwaring was also lucky enough to record another lesser emperor at the beginning of August at Deeping Lakes Nature Reserve that was also witnessed by several members of the Rutland Natural History Group who were being given a guided tour at the time.

Small red-eyed damselfly *Erythromma viridulum*

Another new species for Lincolnshire was recorded by Kevin Durose at a small linear pond near to Crowland in the south of the county; the first of a number of records from this location at the end of August. G. Hopwood also recorded species in tandem, although ovipositing was not observed. The species was also recorded at Mill Pond (Gibraltar Point) where K. Durose spotted at least twenty individuals. Given the numbers present, it is thought that the species at this location may have been present for at least one year.

Red-veined darter *Sympetrum fonscolombii*

This frequent migrant to the UK was recorded within the county towards the end of June at a number of locations; at Gibraltar Point at least six individuals were observed at Tennyson Sands and the Mere (Andy Sims and Rick Bennett). One pair was also seen mating. Further north along the coast, Dave Bradbeer recorded three males at Cleethorpes Country Park at the western end of the lake; five red-veined darters were also noted at Barton including a pair found to be ovipositing. K. Durose recorded three recently emerged red-veined darters at Welland Bank Pits in the south of the county and five at Kirkby-on-Bain Pits.

In summary, a very exciting year with two new species noted in the county and the apparent expansion of other more scarce / notable species.

FRESHWATER INVERTEBRATES

Richard Chadd

2006 saw the first known occurrence in Lincolnshire of the caddisfly known as the grannom *Brachycentrus subnubilus* Curtis 1834. Fifteen larvae were taken from the Upper River Witham at Claypole (SK842489) attached to beds of *Ranunculus*. Previously found as a larva at Winthorpe Rack on the River Trent, north of Newark (SK805567), it is possible that the species has recently crossed the relatively short distance from the Trent to the Witham. Alternatively, it may always have been present in low numbers in the Witham, which, in the distant past, was a tributary of the Trent. Recent climatic aberrations may have favoured a rise in an already extant population, allowing the species to be detected.

The larva, which is bright green, builds a case composed of secreted silk studded with plant fragments, which has a square cross-section. This allows the lower edge of the 'mouth' of the case to be fixed to the substratum (plant stems or tree roots), facing upstream into the current. The larva then traps suspended particles of food by filtering the water, using fringes of setae on the 2nd and 3rd legs, which are held in an open position against the flow. It also has single large spikes on the ventral edges of the 2nd and 3rd tibiae for catching bigger prey, such as water fleas and water mites. Fringes of long setae on the metathorax and 1st abdominal segment form a 'gate', which prevents debris filling the case.

It is to be hoped that this fascinating insect will spread, in time, to further sites on the River Witham and elsewhere in Lincolnshire.

MOSSES, LIVERWORTS AND LICHENS

M.R.D. Seaward

All bryophyte records listed below, namely one county (*Plagiothecium laetum*), five vice-county (*Bryum imbricatum, Dichodontium pellucidum, Riccia sorocarpa, Weissia longifolia* var. *longifolia* and *W. brachycarpa* var. *brachycarpa*) and 24 divisional records, have been provided by Frank Lammiman, Christine Rieser and Nick Hodgetts. As regards the county's lichen flora, two new county (*Lecanora confusa* and *L. sublivescens*), three new vice-county (*Candelariella vitellina* forma *flavovirella, Cladonia scabriuscula* and *Lecanora hagenii*), 14 divisional and innumerable grid square records were added to our registers this year. These records are additional to those listed in Seaward (A checklist of Lincolnshire lichens, 2004, *Trans.Lincs.Nat.Un.* **26**: 26-30 & 39-40). A further 21 churches or churchyards with demolished churches were investigated for the first time by the author in 2006 as part of the British Lichen Society's churchyard survey; to date, 485, representing more than 71% Church of England churchyards in the county, have been researched.

The continued response to atmospheric amelioration in terms of sulphur dioxide pollution is apparent throughout much of the county as reflected in the recolonisation by epiphytic bryophytes and lichens, most of these assemblages responding to nutrient enrichment (eutrophication, or indeed hypertrophication), resulting from agrochemicals and animal husbandry practices.

The moss and liverwort records were contributed by N.G. Hodgetts (NGH) in 2004 and 2005, and by F.R. Lammiman (FRL) and C. Rieser (CR) in 2006. The lichen records, unless otherwise stated, were contributed by the author in 2006, who is most grateful to Dr B.J. Coppins, Royal Botanic Garden, Edinburgh, for his identification/confirmation of the more critical material. The nomenclature is according to T.L. Blockeel and D.G. Long (1998) *A Check-list and Census Catalogue of British and Irish Bryophytes* and to B.J.Coppins (2002) *Checklist of Lichens of Great Britain and Ireland*. I am most grateful to N.G. Hodgetts, F.R. Lammiman, P. Porter and C. Rieser for providing me with their records and to Lady Willoughby for permission to study Grimsthorpe Park.

Mosses

Bryum gemmiferum R.Wilczek & Demaret + 1 (2004, NGH)
B. imbricatum (Schwägr.) Bruch & Schimp + 1 (FRL & CR, 2006), 15 (in plant pot, Grantham, 2005, NGH, **VCR**)
B. klinggraeffii Schimp. + 1 (2004 NGH), 3 (2004, NGH)
B. subapiculatum Hampe + 7 (FRL & CR, 2006)
B. violaceum Crundw. & Nyholm + 1 (2004, NGH), 2 (2004, NGH), 8 (FRL & CR, 2006), 14 (2004, NGH)
Cryphaea heteromalla (Hedw.) D.Mohr + 7 (FRL & CR, 2006)

Dichodontium pellucidum (Hedw.) Schimp. + 15 (on limestone pebble, Belton Park, 2005, NGH, **VCR**)
Dicranella staphylina H.Whitehouse + 1 (2004, NGH), 2 (2004, NGH)
Didymodon sinuosus (Mitt.) Delogne + 4 (FRL & CR, 2006)
Ditrichum cylindricum (Hedw.) Grout + 2 (2004, NGH), 3 (2004, NGH), 14 (2004, NGH), 15 (2004, NGH)
Drepanocladus polygamus (Bruch, Schimp. & W.Gümbel) Warnst. + 7 (FRL & CR, 2006)
Ephemerum serratum var. *minutissimum* (Lindb.) Grout + 14 (2004, NGH)
Leptobryum pyriforme (Hedw.) Wilson + 2 (2004, NGH)
Physcomitrium pyriforme (Hedw.) Brid. + 15 (2005, NGH)
Plagiothecium laetum Bruch, Schimp. & W.Gümbel + 7 (Cocklode Wood, FRL & CR, 2006, **NCR**)
Weissia brachycarpa var. *brachycarpa* (Nees & Hornsch.) Jur. + 15 (N of Denton, 2005, NGH, **VCR**)
W. longifolia var. *longifolia* Mitt. + 15 (wet soil of unploughed field, N of Denton, 2005, NGH, **VCR**)

Liverworts

Marchantia polymorpha ssp. *ruderalis* Bischl. & Boisselier + 2 (FRL & CR, 2006)
Riccia glauca L. + 3 (2004, NGH), 14 (2004, NGH)
R. sorocarpa Bisch. + 14 (S of Osbournby, 2004, NGH, **VCR**; there is also an unconfirmed record by E.A.W. Peacock from Hartsholme in 1905)

Lichens

Arthonia radiata (Pers.) Ach. + 9
Caloplaca crenulatella (Nyl.) H.Olivier + 3
Candelariella reflexa (Nyl.) Lettau + 16
C. vitellina forma *flavovirella* (Nyl.) A.Henderson + 16 (on tombstone, Morton church, July 2006, **VCR**)
Cladonia scabriuscula (Delise) Nyl. + 13 (on acid sand, nr Whisby Nature Park, Dec. 2006, P. Porter, **VCR**)
Lecanora chlarotera Nyl. + 1, 16
L. confusa Almb. + 4 (on *Acer platanoides*, at edge of supermarket car-park, Grimsby, Apr.2006, **NCR**)
L. hagenii (Ach.) Ach. + 8 (on *Fraxinus*, Ludford churchyard, Nov. 2006, **VCR**)
L. sublivescens (Nyl. ex Crombie) A.L.Sm. + 16 (on *Fraxinus*, Grimsthorpe Park, July 2006, **NCR**)
Lecidella elaeochroma (Ach.) M.Choisy + 18
Leptogium schraderi (Ach.) Nyl. + 9
Micarea lignaria (Ach.) Hedl. + 6
Mycoblastus fucatus (Stirt.) Zahlbr. + 7
Pertusaria albescens (Huds.) M.Choisy & Werner + 16
Pseudevernia furfuracea (L.) Zopf + 16
Ramalina canariensis J.Steiner + 8
Trapelia involuta (Taylor) Hertel + 7
Verrucaria macrostoma Dufour ex DC. + 2

MOTHS

Colin Smith

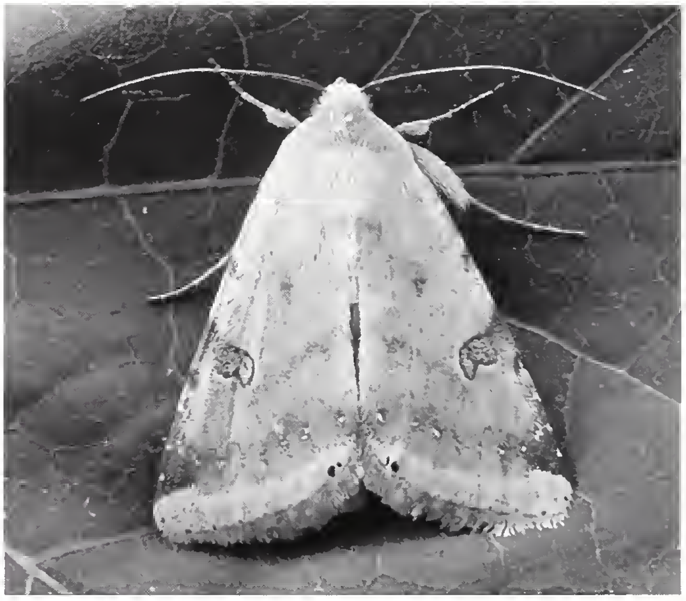
For moth recorders 2006 was a very interesting year. It started very slowly but by June migrants had started arriving in numbers and this spurred recorders into action. The increased effort and again more people recording has produced almost twice as many records as last year, well in excess of 30,000 records have so far been sent in for 1066 species, 476 Macro's and 590 Micro's. Despite all this it is still apparent that many of the resident species are still declining in numbers.

Migrants

It was the best year for migrants in living memory. The first indications came in June when a group of us trapping at Gibraltar Point on the 11th caught a red-necked footman *Atolmis rubricollis* out on the saltmarsh (Plate 12). Then Paul French caught a European corn borer *Ostrinia nubilalis* at Frampton on the 16th.

Bedstraw hawk-moth
(photo Roger Labbett)

By the end of the month bedstraw-hawk *Hyles gallii*, striped-hawk *Hyles livornica*, lots of hummingbird-hawks *Macroglossum stellatarum* and two small mottled willows *Spodoptera exigua* had been reported. Paul Troake recorded a marbled clover *Heliothis viriplaca* at Gibraltar Point on the 28th, the first for over a hundred years.


Bordered straw
(photo Roger Labbett)

The small mottled willows poured in during July; there had been seven records previously, in 2006 over 100 were reported. Bordered straws *Heliothis viriplaca* began turning up all over the place. The many-lined *Costaconvexa polygrammata* came to light at Geoff Wright's garden in Muckton on the 12th, a new species to the county (Plate 13).

Scarce bordered straw
(photo Colin Smith)

Chris Dobson caught a least carpet *Idaea vulpinaria* in his garden at Langworth on the 25th which is also a first for Lincolnshire. By the end of July silver Y *Autographa gamma* moths were arriving in huge numbers Paul French did some counts on the 27th and estimated there were around 1 million at Frampton Marsh. Four lunar-spotted pinions *Cosmia pyralina* were reported and by the end of July, the first of 30 convolvulus hawks *Agrius convolvuli* (Plate 14). had arrived and so had the first the scarce bordered straws *Helicoverpa armigera*.

The barrage continued throughout August when the previous total of 9 scarce bordered straw records became more than 209 with Allan Drewitt catching the first for VC53 at Market Deeping on 23rd. Paul Troake had a tawny wave *Scopula rubiginata* at Gibraltar Point on the 6th and 7 scarce silver Ys *Syngrapha interrogationis* and a ni moth *Trichoplusia ni* were seen. The first of the 16 vestals *Rhodometra sacraria* were reported then the first gem *Orthonama obstipata*.

White point.
(photo Roger Labbett)

A total of 11 white points *Mythimna albipuncta* tripled the previous number of records. There were 33 great brocade *Eurois occulta* records and the first of the 33 large thorns *Ennomos autumnaria* started to arrive. Rusty dot pearl *Udea ferrugalis*, rush veneer *Nomophila noctuella* and diamond-backed moth *Plutella xylostella* were all seen in numbers as were dark swordgrass *Agrotis ipsilon* and pearly underwing *Peridroma saucia*.

Great brocade
(photo Roger Labbett)

September continued to be good with 3 more gems and most of the convolvulus hawks seen this month. Six of the seven dusky-lemon sallows *Xanthia gilvago* were recorded and another European corn borer. Chris Dobson caught a pale-lemon sallow *Xanthia ocellaris* in his garden at Langworth on the 22th the first seen in Lincolnshire. *Euchromius ocellea* was found by Colin Smith at Osgodby Moor on the 14th, a migrant Pyralid new to the County. Another county first was *Antigastra catalaunalis,* also a migrant Pyralid caught by Martin Gray in his Garden at Broadholm on the 26th.

Euchromius ocellea
(photo Colin Smith)

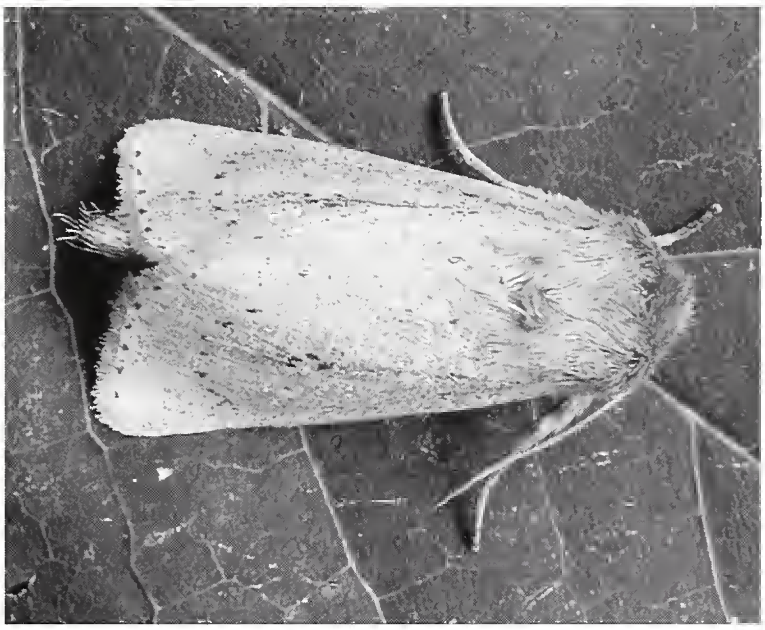
Roy Goff caught a silver-striped hawk on the 28th in his garden at Kate's Bridge along with *Palpita vitrealis* another migrant Pyralid new to VC53. Liz White caught the first of 22 delicates *Mythimna vitellina* on the 20th at Multon Hall the first record for VC53.

The migrants continued through most of October with the last scarce bordered straw on the 30th. There was a late ni moth on the 28th but no new species.

It was not quite the end though. On the 2nd November I had an e-mail from Toby Ludlow to say Hilary Painter had reported a death's-head hawk *Acherontia atropos* at Gate Burton, a fitting end to a splendid season.

Macromoths

In general the resident species did not show any marked change, the increased recorder activity accounting for the small increase in species seen. Several of us made a trip to the southern edge of the county in the hope of seeing white-marked *Cerastis leucographa* in April. Despite the cold night one turned up just as we were packing up. A week later Mr G Wright caught one in his garden at Muckton on the 30th April, the first seen in VC54. On the same night Mr R Goff caught a blossom underwing *Orthosia miniosa* at Morkery Wood the first seen since 1987 and the first in VC53 for a hundred years. During June, Pete Smith surveyed the Limewoods for broad-bordered bee hawk *Hemaris fuciformis*, he found them in ten locations, in large numbers in some places. Mr A Drewitt caught a concolorous *Chortodes extrema* in June in his garden at Market Deeping; he had one last year at the same time but only had a picture which was not conclusive evidence. These are the first seen in Lincolnshire since 1972 and the first in VC53. The colony of brown-tail moths *Euproctis chrysorrhoea* on the coast at Donna Nook spread or were helped by migrants, moths were found across the surrounding area as far afield as Lincoln and larvae were found at Binbrook and Barnoldby-le-Beck. Two Webb's wainscots *Archanara sparganii* found by Mr R. Labbett at Rimac on 11th September were the fourth record for the species. There year ended with an large number of summer species having an extra generation the most notable being beautiful hook-tip *Laspeyria flexula*, buff footman *Eilema depressa* and rosy footman *Miltochrista miniata*.



Webb's wainscot
(photo Roger Labbett)

Micromoths

There have been eighteen new species for the county and eleven new vice county records during the year those not mentioned under migrants are listed below.

Narycia duplicella at Morkery Wood by Mr R. Goff on 22nd March a new VC53 record.
Morophaga choragella at Kate's Bridge by Mr R. Goff on 8th July a new VC53 record.
Monopis crocicapitella at Broadholme by Mr M. Gray on 15th June a new county record.
Caloptilia cuculipennella at Willingham Forest by Mr C. Smith on 4th May a new VC54 record.

Caloptilia populetorum new for the county, four records by Mr R. Goff in VC53 and one by Mr C. Smith in VC54.
Phyllonorycter roboris at Morkery Wood by Mr R. Goff on 12th October a new county record.
Phyllonorycter platani at Shillingthorpe by Mr R. Goff on 9th October a new county record.
Cameraria ohridella at Kate's Bridge by Mr R. Goff on 4th August a new county record.
Coleophora striatipennella at Broadholme by Mr M. Gray on 13th June a new VC53 record.
Coleophora versurella at Broadholme by Mr M. Gray on 13th June a new VC53 record.
Coleophora clypeiferella at Roughton by Mr K. Robertson on 29th June and at Louth by Mr R. Labbett on 27th July a new county record.
Coleophora salicorniae at Broadholme by Mr M. Gray on 28th July a new VC53 record. Also seen at Louth by Mr R. Labbett and at Market Rasen by Mr C. Smith on 27th July. A very unusual set of records for a coastal species.
Elachista rufocinerea at Broadholme by Mr M. Gray on 13th May a new VC53 record. *Depressaria daucella* at Marton by Mr B. Hedley on 29th August a new county record.
Ethmia dodecea at Kate's Bridge by Mr R. Goff on 24th June a new county record.
Monochroa tenebrella at Market Rasen by Mr C. Smith on 7th July a new VC54 record.
Monochroa hornigi at Kate's Bridge by Mr R. Goff on 24th June a new county record.
Scrobipalpa obsoletella at Kate's Bridge by Mr R. Goff on 17th July a new county record.
Scythris grandipennis at Scotton Common by Mr C. Smith on 15th June a new county record.
Phalonidia manniana at Whisby Nature Park by Mr C. Smith on 10th June a new VC53 record.
Pseudococcyx turionella at Market Deeping on 17th May by Allan Drewitt a new county record.
Crambus uliginosellus at Moor Farm by Mr C. Smith on 9th June a new county record.
Pyla fusca at Broadholme by Mr M. Gray on 28th July a new VC53 record.
Ephestia parasitella at Roughton by Mr K. Robertson on 29th June a new county record.
Marasmarcha lunaedactyla at Rippingale by Ms P. Warman on 1st July a new county record.
Ovendenia lienigianus at Whisby Nature Park on 3rd July by Phil Porter a new county record.

MYCOLOGY

Ken Rowland

The year 2006 has been much more profitable as far as I have been concerned, having been able to be more active than the last two years although still having some restrictions which one will have to get used to.

As the weather in the middle of the year did not appear conducive to fungal growth I decided that the autumn would be the time to devote energies to recording.

Early Fungus Forays appeared to have a distinct lack of common things like the *Amanita muscaria* (fly agaric) although they were reported from some places as early as mid-September and did show up later at the end of October. An early foray at Snipe Dales on behalf of the Lincolnshire Wildlife Trust turned up some eighty five species including one unusual jelly fungus *Tremella lutescens* for which we only have four Lincolnshire records. An interesting point is that there were eight new site records and this seems to be the norm for any site which is or has been recorded on a regular basis so it rather points to the fact that regular or repeat visits can prove useful. This point again was proved when the annual autumn foray was held at Haugham Wood which was visited in the autumn of 1995 and the spring of 1996. Quite a good haul was made with eighty three species recorded of which thirty nine were new site records including three wax caps which in theory are grassland species but were happily growing in woodland conditions including one *Hygrocybe psittacina* , the parrot wax cap which has the greenish yellow colouration which is always difficult to explain away when one says there are no green fungi as they do not contain chlorophyll. Other not rare but unusual fungi that turned up at this meeting were *Amanita vaginata* (Grisette), *Macrocystidia cucumis* (cucumber cap) which as its name implies smells of cucumber. As in all the forays this year the Russula and Lactarius families were conspicuous not by their absence but by their scarcity only two Lactarius and one Russula being recorded.

At Hartsholme on two Forays for Lincoln City Council some ninety eight species were found, again with two or three new site records and I don't think there is another site in Lincolnshire that has been so well recorded since the 1940's. The first records for this site go back to 1898 by the Rev. Canon W. Fowler. We have over 480 species recorded on this site although I must admit we have had some help from specialists like Dr Bruce Inge the Myxomycete specialist. One unusual fungus here was *Fomes fomentarius* (hoof fungus) found on oak (*Quercus* hybrid). Its normal host is birch but is found on beech rarely but this is the first time I have seen it on oak; its tastes must be changing.

Another Swanholme Foray for Lincoln City Council at the end of October with only fifty two species recorded but again seven new site records this is a relatively new site being created from gravel workings of the World War II period and recording only started in 1989. The most unusual species here was *Pleurotus ostreatus* (oyster fungus) growing on an old birch stump, again not a usual host species. This is a SSSI site and over the last three years is being gradually neglected by the Lincoln City Council and since the suspension of meetings of the 'Advisory Group' the amount of environmental work seems to have fallen off dramatically. On frequent enquiries I keep being told that things will be restarted in the near future (how near?) and what is Natural England doing?

Chambers Wood Foray for Forest Enterprise - this again is a site where recording has been on going for many years and still new species turn up. This year only sixty three species were recorded this year, about 70% of normal but there were still two new records.

At Whisby Nature Park, again a relatively new site from a gravel pit to a nature reserve in about twenty five years, forays for the Lincolnshire Wildlife Trust again produced a fairly low result with some seventy odd species recorded with four new site records. The most interesting to me being *Neotiella vivida* a tiny, red cup fungus growing in moss. Another interesting record was surprisingly one of the more common jelly fungi *Tremella mesenterica* (yellow brain fungus). Even though a young site it boasts some 370 species which I think is very good for a site which has a minimum of established woodland.

My own garden in Skellingthorpe has over the last year or two provided new county records but not this year although one item did cause me some concern for a time. On 18th October I found in the flower border three specimens of the earth star *Geastrum fimbriatum*. Now I do not consider my garden a typical habitat for earth stars so the immediate reaction was who was playing tricks and planted them? On the 25th October four specimens of *G. fimbriatum* were found at Hartsholme. But then on the 29th October a further four specimens turned up in my garden but these could not have been planted as they were under vegetation and still rooted so the question seemed to be answered - they were growing in the garden after all! Looking further, the only thing I could see was that there was some leaf litter and some old bits of limestone lying around which would be text book habitat. It will be interesting to see if they reoccur next year in the same place.

In the Miscellaneous Sites list two records in particular are interesting, both by Colin Faulkner. The first is from Grimsthorpe Park and was for a suspected specimen of the Red Data Book species *Piptoporus quercina*. Unfortunately there was insufficient evidence for positive identification but another to be investigated next year, the other is a myxomycete *Fuligo rufa* which is a new county record.

In early December I was invited to look at the Old Walled Garden at Coleby Hall and during a quick half-hour tour in the late afternoon, sixteen species were recorded including the unusual *Coprinus domesticus* (firerug inkcap) - a site which I will be following up in 2007.

Lastly one or too grumbles and observations, Political correctness *Auricularia auricula judae* (Jew's ear fungus) is now to be known as jelly ear but what does the literal translation mean? English names are possibly alright (I voted against them at the BMS because the Latin is known world wide). In the new Roger Phillips' book (very good, no complaints) the English name is put first which makes it difficult to use, so if you send or want to discuss any records please say which book you are using as some have different names.

On the health and safety side we are now losing some old trees because they are hollow. A beech in Hartsholme has recently been felled purely because it was hollow and considered dangerous to the public, old trunks and branches are being cleared all leading to loss of habitat, not to say all the concrete and paved gardens that are appearing in our villages.

My thanks have to go to Ray Halstead, Jackie Freeman, Paul Kirby, Jan Rousseau, David Knight, Colin Faulkner and any others who have sent me records, also to Phil Porter who arrives on the doorstep with boxes of specimen from Whisby Nature Park.

SHIELDBUGS

Annette Binding

In 2006 *Dolycoris baccarum* which was new to the county in 2005, was found at four new locations. Adrian Royle found and photographed the species at Great Scrubbs Wood on 31st July and in Little Scrubbs Meadow LWT Reserve on 27th August. Allan Binding swept two in the Plover Beach area of Whisby Nature Park on 8th June and we recorded four specimens at College Wood on 25th August. This suggests that this species is spreading rapidly in the county as all the locations where it was found had been well worked in the past both by ourselves and others.

Fifteen of the twenty species recorded in the county were found in 2005. Among the more uncommon species recorded were *Podops inuncta* and *Rhacognathus punctatus*.

Colin Smith found *Podops inuncta* at Rand Wood in February where he had recorded it in previous years and added a new site when he found two specimens near Green Man Wood on 14th March bringing the total number of county records to eleven.

There were four records *of Rhacognathus punctatus* in 2006. Colin Smith found it at Kirkby Moor LWT Reserve on 14th February and at Linwood Warren LWT Reserve on 17th April, both locations where the bugs have been recorded in the past. Stephen Sowden found the species at two new locations in the Haxey area on the Isle of Axholme, Rocket Lane on 3rd June and Axholme Line on 4th June. This brings the total number of county records of this species to eleven.

There were only two records of the parent bug *Elasmucha grisea*. A single adult was found by Allan and myself at Beaumont Fee in Lincoln on the 9th November. Leslie Hebdon sent me a number of photographs of a 5th instar nymph found on 4th September at Siltside, Gosberton Clough. This species appears to have declined over the past few years.

Finally, in April Mansell Beard sent me two specimens of the southern green shieldbug *Nezara viridula* (Plate 15). These had been unwittingly imported from Italy in a vehicle in June. It is most likely that the bugs had entered the vehicle to hibernate. *Nezara viridula* is very common in southern Europe. It is similar to, but much larger than, the green shieldbug *Palomina prasina* and has three to five light dots on the front edge of the scutellum. It also lacks the dark punctures found on the green shieldbug. Like the green shieldbug, *Nezara viridula* adults turn brown over winter but become green again when they emerge in the spring. The first two specimens received from Mr Beard were brown. The second two were green.

SPIDERS

Annette Binding

There were no new county records in 2006 but there were records of species which are uncommon in Lincolnshire.

I found *Araneus sturmi* at Hagnaby Lock conservation area on the 4th May. This species is usually found on evergreens and my specimen was found on a fence post under pine trees. There are only two other records of *Araneus sturmi* in Lincolnshire, Stainton Wood in 1919 recorded by L. A. Carr and Laughton Forest in 1992 recorded by Roy Kent. The spider is widespread but uncommon in Britain.

The related species *Araneus triguttatus* was recorded again at Whisby Nature Park on 8th June (Plate 16). This spider appears to be quite widespread at Whisby. It prefers deciduous trees. This was the 12th county record. *Araneus triguttatus* is nationally much rarer than *Araneus sturmi* and is found mainly in southern England.

On the 7th May I found *Theridion blackwalli* at Washingborough. This was the 5th county record of this species which is nationally uncommon. All recent records have been from Washingborough.

There were three records of *Larinioides patagiatus*, all from Whisby Nature Park, swept by Allan Binding. This is the only current site in the county for this species and the closely related *Larinioides sclopetarius*. The much commoner and more widespread *Larinioides cornutus* also occurs at Whisby Nature Park, making this the only location in the county where all three species of *Larinioides* have been recorded in recent years.

Colin Smith sent me a number of spiders which he had collected in 2006 from various sites in the county. He found the *Linyphid* spider, *Walckenaeria nudipalpis* at Middle Rasen Plantation on 4th April. This was the 9th county record for this species and the first record for 10 years.

Colin found a single specimen of *Hahnia montana* in moss at Usselby Plantation on 9th April. This was the 12th county record for the species which was last recorded in the county in 1992.

Colin also found *Episinus angulatus* in an old nestbox at Kirkby Moor Reserve. This was the 3rd county record. All three records have been from Kirkby Moor Reserve where it was first recorded in 1995 by Amanda Borrows and again in 2000 by myself.

Colin sent me an immature male *Steatoda phalerata* found on 3rd February at Scotton Common Reserve, a new site for this species which likes sandy areas and heathlands.

Three species of *Ozyptila* were recorded in the county in 2006. They are distinguished from the similar *Xysticus* species by the clavate (club-shaped) hairs on the carapace, legs and abdomen. *Xysticus* species have pointed spines. Colin Smith found *Ozyptila trux* at Usselby Plantation on 9th April, the 8th county record, and *Ozyptila atomaria* at Wilsford on 14th March in moss, 14th county record. Allan Binding swept a single specimen of *Ozyptila praticola* at Whisby Nature Park on 10th September, the 10th county record.

John Lamin and Ruth Race both found *Pholcus phalangioides* in their homes, giving two new county locations for this species.

Stephen Sowden sent me several specimens from the Isle of Axholme area, a part of the county which is rather under-recorded. These included *Araniella cucurbitina sens. str.* and the only 2006 records of *Hypomma bituberculatum*, a species found in wet areas, often in vegetation by the side of streams and rivers.

Finally, *Tetragnatha nigrita*, a species which is rare in the county, was once again recorded at Whisby Nature Park where it appears to be quite widespread and well established.

WEATHER

Phil Porter, John Walker and Nick Tribe

July and September 2006 were the hottest on record and overall, 2006 was the warmest year on record in Britain.

Whisby Nature Park rainfall (mm) (1998 -2001 not fully recorded therefore excluded)

	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	Total
2006	15.5	45.5	49.4	33.6	88.9	13.3	42.7	74.5	65.8	58.1	51.4	56.7	595.4
1950-2006 mean	49.7	38.9	41.9	42.2	45	48.3	56.3	61.1	47.7	49.9	56.3	53.7	589.4

Saltfleetby-Theddlethorpe National Nature Reserve rainfall (mm)

	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	Total
2006	25.5	35.5	35	32.2	51.5	14	12.9	70.5	60.5	77	49.5	50.5	514.6
1993-2006 mean	51.3	38.8	33.7	43	46	43.3	47.4	57.2	61.7	65.9	62.1	55.8	613.1

ERRATA

The Volume 26 Part 3 article entitled Birds by Anne Goodall should have been entitled ‘Birds of Conservation Concern in Lincolnshire 2005’.

TRANSACTIONS

TRANSACTIONS OF THE LINCOLNSHIRE NATURALISTS’ UNION

Officers of the Union in 2006

President	Christine Rieser	**President elect**	Dr Michael Archer
General Secretary	John Margetts	**Treasurer**	Ian MacAlpine-Leny
Auditor	John Levine	**Membership Secretary**	via LWT
Publicity Secretary	Vacant	**Programme Secretary**	Ashley Butterfield
Sales Secretary	Colin Smith	**Transactions Editor**	Nick Tribe

Executive Committee Chris Manning, Colin Smith, Ian Cappitt, Margaret Haggerty, Richard Chadd, Roger Parsons.
External representatives Ken Rowland (Swanholme Advisory Group), Richard Chadd (Lincolnshire Environmental Records Centre), Chris Manning (Wildlife Sites Review Group and Lincolnshire Biodiversity Action Plan).

Section Recorders

Ants, wasps & bees	Dr Michael Archer
Bats	Mrs Annette Faulkner
Beetles	Dr Roger Key
Bryophytes/lichens	Prof. Mark Seaward
Butterflies	Mr Allan Binding
Dragonflies	Mr Richard Chadd
Fish	Mr Nick Bromidge & Mr Ian MacAlpine Leny
Flies	Mr Andrew Godfrey & Mrs Jillian Mears
Freshwater invertebrates	Richard Chadd & Ms Alice Hiley
Fungi	Mr Ken Rowland
Grasshoppers, etc.	Mr Brian Redman
Geology	Mr David Robinson
Higher plants	Mrs Irene Weston & Mr Paul Kirby
Isopods & myriapods	Mr Neil Pike
Macro moths	Mr Colin Smith
Mammals and herptiles	Mr Colin Faulkner
Micro moths	Mr John Lamin & Mr Colin Smith
Molluscs	Mr John Redshaw
Plant Galls	Mr Graeme Clayton
Sawflies	Dr David Shepphard
Spiders	Mrs Annette Binding
Shield bugs	Mrs Annette Binding

SECRETARY'S REPORT

John Margetts

The LNU has continued to progress over the last year. The acquisition of public address system is a welcome part of that progress.

One of our major projects the last few years has been the botany project, with the entry onto computer of large amounts of botanical records. The data entry part of this has been come to an end together with our funding for the project. Now all we have to do is validate the records and this will then hopefully lead to a new published flora of Lincolnshire.

We have published two new books this year – *Moths and Butterflies of Lincolnshire* revised by Colin Smith at £12.00 and *Deer and Deer Parks of Lincolnshire* by Chris Manning at £15.00.

The LNU continues to contribute to other organisations – we have representatives on the Biodiversity Action Plan committee and the Lincolnshire Environmental Records Centre and are involved in other activity around the county.

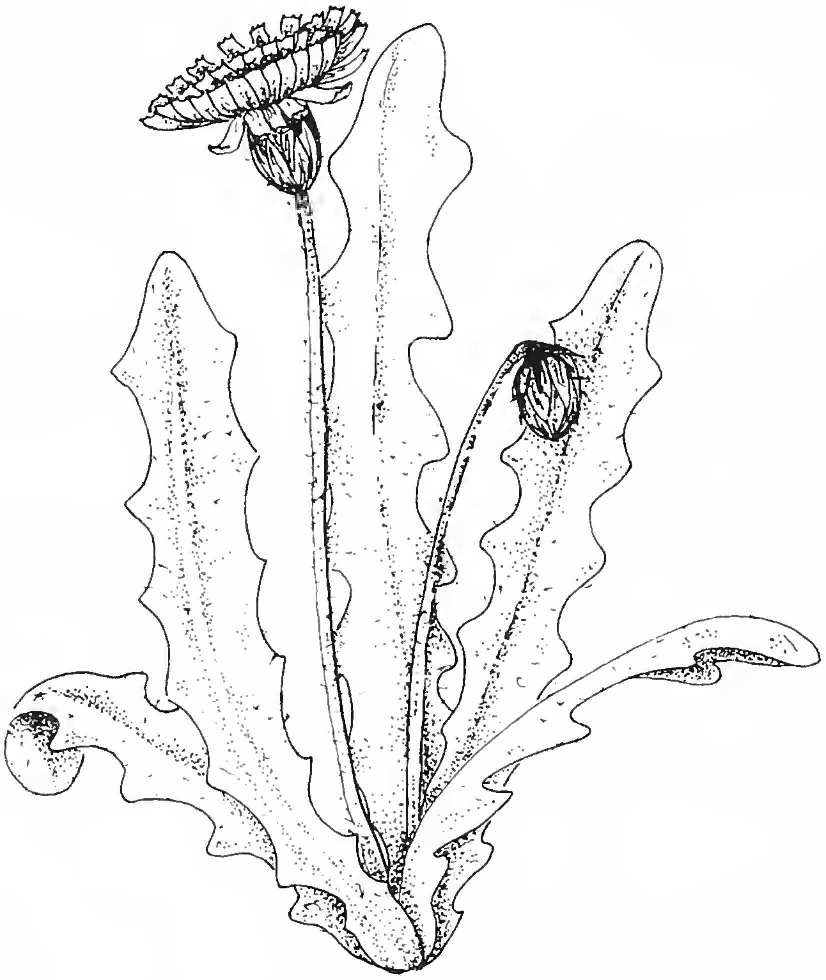
The Executive Committee met 4 times in the year, but as is our practice, we have discussed matters as they have arisen using our e-mail network. Much work is done this way with the formal decisions being made at the physical meetings.

MEETINGS IN 2006

Saturday January 21st	The Barn Owl in Lincolnshire by Mr Garry Steele
Saturday February 18th	Recorders' Meeting
Saturday March 11	Annual General Meeting and Presidential Address by Mr Richard Chadd on The Freshwater Communities of the River Witham

683rd meeting	Sunday April 2nd	Cloot Drove,Spalding
684th meeting	Sunday May 21st	Morkery Wood
685th meeting	Sunday June 4th	Corus Steel, Scunthorpe
686th meeting	Sunday June 11th	River Welland,Stamford
687th meeting	Sunday July 23rd	Legbourne Wood
688th meeting	Sunday August 20th	Trent Port, Marton
689th meeting	Sunday September 17th	Rimac, Saltfleetby-Theddlethorpe NNR
690th meeting	Sunday Oct 22nd	Haugham Wood

Saturday November 25th	The Changing Coastline of Lincolnshire over the last few thousand years by Mr James Rackham.



Contributing to *The Lincolnshire Naturalist*

We are constantly on the lookout for full length articles or short notes, even a few lines which can be useful space fillers, on any aspect of our natural history, current or historic. Consider a note in *The Lincolnshire Naturalist* for any new or significant observations.
Articles should be typed. It would help the editor tremendously if they could either be e-mailed or sent on CD or floppy disk with accompanying paper copy, in Word© or Word Perfect© format. Drawings, colour or black & white photographs, colour transparencies or negatives (please include a print) can be included. If you submit your own photographs, take them or scan them at a resolution of at least 200 dots per inch and at a size equal to or larger than the size they will be printed at (approximately 11.5x7.5cm). Colour illustration may be rendered to black and white. Please give a caption. Illustrations will be returned and edited text resubmitted to the author for approval and proof-reading before publication.
Convention adopted for names - Latin names should be *italicised*, **not** (bracketed) nor underlined and should follow the English name (where applicable) with no separating comma. English names should start with lower case letters unless incorporating other names warranting capitalisation (eg Brandt's bat).

References to journals and books should please be as below. Please note and use the capitalization and italic convention.
WOODRUFFE-PEACOCK, Rev E.A., 1900. The Lincolnshire Naturalists at Freiston. *The Naturalist*, **25**: 141-144.
DUDDINGTON, J. & JOHNSON, R. 1983. *The Butterflies and Larger Moths of Lincolnshire and South Humberside*. Lincolnshire Naturalists' Union. Lincoln. 299pp.

The final copy date is **31st March** of the year in which the Transactions are to be issued. Please contact the editor directly if there is difficulty in meeting this deadline. If in any doubt as to whether your observation merits a note or an article, or you have any other queries please do get in touch with the editor c/o Lincolnshire Naturalists' Union, Lincolnshire Wildlife Trust, Banovallum House, Horncastle, LN9 5HF to whom texts should be sent. A guidance note is available and is sent out to recorders. Otherwise, please attempt to imitate the format in this issue of the Lincolnshire Naturalist.

Editorial

Nick Tribe

The editors hope that you enjoy this edition of Transactions. The usual high standard and diversity of articles submitted should ensure that there is ‘something for everyone’. Included this year is an article on the Pye-Pugh Shell Collection which is not only an interesting subject in its own right, but we hope that it will give an interesting insight for future members of the Lincolnshire Naturalists’ Union into what we were doing in the late 1990s-early 2000s as regards collections and the unfortunate event at Stamp End that precipitated the described events. It is good to know that such an important ‘Lincolnshire’ collection is now in good hands. Please note that due to circumstances beyond anyone’s control, there is no Botany article for 2006 in this edition. The Botany article is important and many readers thoroughly enjoy it. We hope to include the 2006 article in the 2007 edition.

Many thanks to all contributors. Your articles and photographs make this journal what it is. Please keep them coming!

THE LINCOLNSHIRE NATURALIST

including
Transactions of the Lincolnshire Naturalists' Union
for 2006
Volume 26, Part 4, 2007

CONTENTS

The Lincolnshire Naturalists' Union & How to Join — inside front cover

Looking for bryophytes in Lincolnshire — Christine Rieser 205
Mr Pye's shell collection — P.J.A. Pugh 216
The wasps (Hymenoptera: Aculeata) of Watsonian Lincolnshire. 4. *Chrysidoidea, Tiphiidae, Mutillidae, Sapygidae* and *Vespinae* — Michael E. Archer 222
Aphrophora salicina at Whisby Nature Park — Annette Binding 238
Lincolnshire Environmental Records Centre: development and the future — Margaret Haggerty 238

Plates 229-236

Lincolnshire Natural History in 2006

Bats — Annette Faulkner 240
Aculeate hymenoptera — Dr Michael Archer 241
Butterflies — Allan Binding 241
Conchology: non-marine molluscs — John Redshaw 242
Dragonflies and damselflies — Ian Cappitt 243
Freshwater invertebrates — Richard Chadd 245
Mosses, liverworts & lichens — Mark Seaward 246
Moths — Colin Smith 248
Mycology — Ken Rowland 253
Shieldbugs — Annette Binding 255
Spiders — Annette Binding 256
Weather — Phil Porter, John Walker and Nick Tribe 257

Errata in last year's issue 258

Transactions of the Lincolnshire Naturalists Union

Officers of the Union in 2006 258
Section Recorders 259
Secretary's report — John Margetts 259
Meetings in 2006 260

Contributing to "The Lincolnshire Naturalist" and Editorial — inside back cover

cover picture ***Orthotrichum affine*, one of the pollution sensitive species that have returned to our woods in recent years**
photo **Christine Rieser**
Line illustrations courtesy of English Nature